VIP X1600

Security Systems

EN | Installation and Operating Manual
Network Video Server

BOSCH

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1 Preface

This manual is intended for persons responsible for the installation and operation of the VIP X1600. International, national and where necessary regional electrical engineering regulations must be followed at all times. Relevant knowledge of network technology is required. The manual describes the installation and operation of the unit.

Conventions

In this manual, the following symbols and notations are used to draw attention to special situations:

Caution

This symbol indicates that failure to follow the safety instructions described may endanger persons and cause damage to the unit or other equipment.

Note

This symbol refers to features and indicates tips and information for easier, more convenient use of the unit.

Intended use

The VIP X1600 network video server is intended for use with CCTV systems and serves to transfer video and control signals via data networks (Ethernet LAN and Internet). Audio signals can also be transmitted with the audio versions of the VIP X1600 modules. The VIP X1600 modules each contain RAM memory for short-term recording of connected cameras. Various functions can be triggered automatically by incorporating external alarm sensors. Other applications are not permitted.

If you have questions concerning the use of the unit, which are not answered in this manual, please contact your sales partner or:

Bosch Sicherheitssysteme GmbH
Robert-Koch-Straße 100
85521 Ottobrunn
Germany

www.bosch-sicherheitssysteme.de

EU Directives

The VIP X1600 network video server complies with the requirements of EU Directives 89/336 (Electromagnetic Compatibility) and 73/23, amended by 93/68 (Low Voltage Directive).

Rating plate

For exact identification, the model name and serial number are inscribed on the rating plate on the under side of the VIP X1600 base and on the rating plates on the circuit boards of the VIP X1600 modules. Please make a note of this information before installation if necessary so as to have it to hand in case of questions or when ordering spare parts.

2 Safety information

Electric shock hazard

- Never attempt to connect the VIP X1600 to any power network other than the type for which it is intended.
- Only use power supply units approved by Bosch Security Systems.
- Never open the housing of the power supply unit.
- Always install a VIP X1600 module in the appropriate VIP X1600 base housing only.
- If a fault occurs, disconnect the VIP X1600 from the power supply and from all other units.
- Install the VIP X1600 in a dry, weather-protected location.
- If safe operation of the unit cannot be ensured, remove it from service and secure it to prevent unauthorized operation. Safe operation is no longer possible in the following cases,
  - if there is visible damage to the unit or power cables,
  - if the unit no longer operates correctly,
  - if the unit has been exposed to rain or moisture,
  - if foreign bodies have penetrated the unit,
  - after long storage under adverse conditions, or
  - after exposure to extreme stress in transit.

  In such cases, have the unit checked by Bosch Security Systems.

Installation and operation

- The relevant electrical engineering regulations and guidelines must be complied with at all times during installation.
- Relevant knowledge of network technology is required to install the unit.
- Before installing or operating the unit, make sure you have read and understood the documentation for the other equipment connected to it, such as cameras. This contains important safety instructions and information about permitted uses.
- Perform only the installation and operation steps described in this manual. Any other actions may lead to personal injury, damage to property or damage to the equipment.

Maintenance and repair

- Never open the housing of a VIP X1600 base. The unit does not contain any user-serviceable parts. Remove only the supplied cover when installing a VIP X1600 module.
- Do not change any components in a VIP X1600 base or VIP X1600 module. The units do not contain any user-serviceable parts.
- Never open the housing of the power supply unit. The power supply unit does not contain any user-serviceable parts.
- Ensure that all maintenance or repair work is carried out only by qualified personnel (electrical engineers or network technology specialists).

3 Product description

Components supplied for VIP X1600 base

- VIP X1600 base
- Mounting kit for installation in 19-inch racks
- Self-adhesive elastic bumpers
- Quick Installation Guide
- Product CD with the following content:
  - Quick Installation Guide
  - Manual
  - System Requirements document
  - Configuration Manager
  - MPEG ActiveX control
  - MPEG viewer
  - DirectX control
  - Microsoft Internet Explorer
  - Microsoft Virtual Machine
  - Adobe Acrobat Reader

Components supplied for VIP X1600 module

- VIP X1600 module
- Mounting kit for installation in the VIP X1600 base
- Terminal connectors
- Quick Installation Guide

Requirements for setup and configuration

- Installation of a VIP X1600 module in a housing VIP X1600 base
- Computer with Windows 2000/XP operating system, access to a network and Microsoft Internet Explorer (version 6.0 or higher)

  or

- Computer with Windows 2000/XP operating system, access to a network and an installed Configuration Manager program

Note

Take also note of the information in the **System Requirements** document on the product CD supplied. Make sure the graphics card is set to 16- or 32-bit color depth and that Microsoft Virtual Machine is installed and activated on your PC. If necessary, you can install the required software and controls from the product CD supplied (see **Components supplied**, page 11).

Operational requirements

- Computer with Windows 2000/XP operating system, access to a network and Microsoft Internet Explorer (version 6.0 or higher)

  or

- Computer with Windows 2000/XP operating system, access to a network and reception software, for example VIDOS

  or

- MPEG-4 compatible hardware decoder from Bosch Security Systems (for example VIP XD) as a receiver and connected video monitor
- For recording and playback: Access to an iSCSI server that is configured and ready for operation

Note

Take also note of the information in the **System Requirements** document on the product CD supplied. Make sure the graphics card for reception on the computer monitor is set to 16- or 32-bit color depth and that Microsoft Virtual Machine is installed and activated on your PC. If necessary, you can install the required software and controls from the product CD supplied (see **Components supplied**, page 11).

Overview of functions

Network video server

The VIP X1600 is a network video server for up to 16 independent video channels in four VIP X1600 modules. It is primarily designed for encoding video and control data for transfer over an IP network. Audio signals can also be transmitted to compatible units with the audio versions of the VIP X1600 modules. The use of existing networks means that integration with CCTV systems or local networks can be achieved quickly and easily.

The VIP X1600 offers a 2/3 D1 or 2CIF resolution at a complete image rate of 25 (PAL) or 30 (NTSC) images per second for up to 16 channels.

The VIP X1600 modules are designed for installing in the VIP X1600 base. Installing the units is a quick and easy operation that does not require any additional tools. With the exception of the module in slot 1, all modules are hot swappable and can be exchanged while the system is running.

Receiver

Compatible MPEG-4 enabled hardware decoders such as VIP XD can be used as receivers. Computers with decoding software installed, such as VIDOS, or computers with the Microsoft Internet Explorer Web browser can also be used as receivers.

Video encoding

The VIP X1600 uses the MPEG-4 video compression standard. Thanks to efficient encoding, the data rate remains low even with high image quality and can also be adapted to local conditions within wide limits. In this manner, the simultaneous coding of all 16 video channels is supported.

Dual Streaming

Dual Streaming allows the incoming data stream to be encoded simultaneously according to two different, individually customized profiles. This feature creates two data streams per camera that can serve different purposes, for example one for recording and one optimized for transmission over the LAN.

Multicast

In suitably configured networks, the multicast function enables simultaneous real-time video transmission to multiple receivers. The UDP and IGMP V2 protocols must be implemented on the network for this function.

DVR

The VIP X1600 can be used as a digital video recorder for long-term recordings in combination with an iSCSI server. For this, the iSCSI server can be connected directly or via the network.

Remote control

For remote control of external units such as pan or tilt heads for cameras or motorized zoom lenses, control data is transmitted via the bidirectional serial interface. This interface can also be used to transmit transparent data.

Tampering recognition and motion detectors

The VIP X1600 offers a wide range of configuration options for alarm signaling in the event of tampering with the connected cameras. An algorithm for detecting movement in the video image is also part of the scope of delivery and can optionally be extended to include special video analysis algorithms.

Snapshots

Individual video images (snapshots) can be called up from the unit, stored on the computer's hard drive or displayed in a separate browser window in JPEG format.

Backup

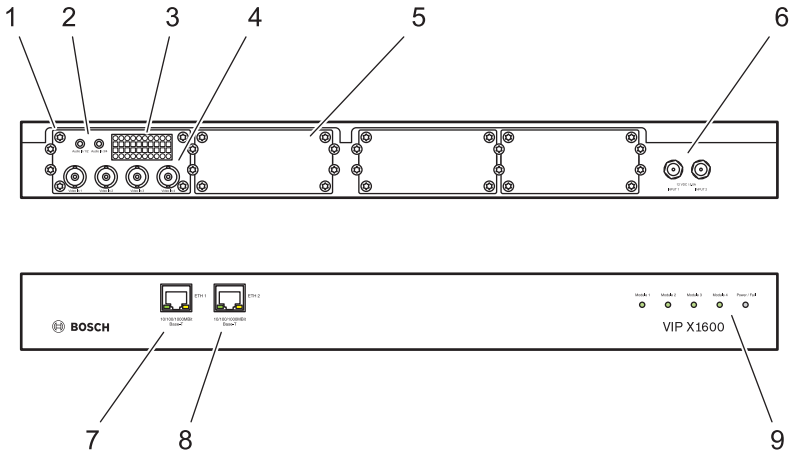
A function for storing the video images displayed on the hard drive of your computer is available on the LIVEPAGE as well as on the RECORDINGS page. Video sequences can be stored by means of a mouse click and can be redisplayed using the MPEG viewer supplied as part of the scope of delivery.

Summary

The VIP X1600 provides the following main functions:

- Up to 16 independent analog BNC composite video inputs (PAL/NTSC)
- Video, audio and data transmission via IP data networks
- Dual Streaming function for each video input for simultaneous coding based on two individual profiles
- Multicast function for simultaneous picture transmission to multiple receivers
- Video encoding to international standard MPEG-4
- Audio coding according to the international standard G.711 (audio version only)
- Two integrated Ethernet ports (10/100/1000 Base-T)
- Transparent, bidirectional data channel with an RS232/RS422/RS485 serial interface
- Remote control for all internal functions with TCP/IP
- Password protection to prevent unauthorized connection or configuration changes
- Local short-term recording for 4 cameras on RAM per VIP X1600 module
- Four alarm inputs for external sensors (door contacts, for example) per VIP X1600 module
- Four relay outputs for switching of external units (such as lamps or sirens) per VIP X1600 module
- Built-in video sensor for motion and tamper alarms
- Event-driven automatic connection (for example at switch-on and for alarms)
- Optional completely redundant power supply
- Almost unlimited storage capability when connected to an iSCSI server
- Option for redundant network connection or direct connection to iSCSI server
- Quick, convenient configuration via integrated Web server and Microsoft Internet Explorer or using the Configuration Manager program
- Firmware update using flash memory
- Convenient uploading of configuration data

Connections and displays



1 Installed VIP X1600 module

2 Audio line inputs (mono) **Audio In 1/2** und **Audio In 3/4**
3.5 mm stereo jack sockets for connecting audio cables
(only for audio versions of the VIP X1600 modules)

3 Terminal connectors for external signal sources, relay outputs and serial interface for transmission of control data (RS232, RS422 and RS485)

4 Four video inputs **Video In 1** ... **Video In 4**
BNC sockets for attaching video sources

5 Cover for vacant slot

6 Sockets for connecting one or two power supply units

7 RJ45 socket **ETH 1**
for connecting to an Ethernet LAN (local network)

8 RJ45 socket **ETH 2**
for redundant connection to the network or for direct connection to an iSCSI server

9 LEDs, status information for the VIP X1600 modules and the VIP X1600 base

Note
For more information about the LEDs see page 117.

4 Installation

The VIP X1600 modules are solely intended for installing in the VIP X1600 base. Installing the units is a quick and easy operation that does not require any additional tools.

The VIP X1600 is designed for installing in a switch cabinet. Mounting the unit in a 19-inch rack using the installation material supplied is a quick and easy operation.

It is also possible to operate this as a desktop unit. The four elastic bumpers provided with the components supplied ensure a non-slip support.

General installation conditions

Caution

The VIP X1600 is designed for indoor operation. Select a suitable location for installation where the unit will not be subjected to conditions of extreme temperature or humidity. The ambient temperature must be between 0 and +50 °C (+32 und +122 °F), and the relative humidity between 20% and 80% (non-precipitating).

The VIP X1600 generates heat during operation. During installation, please note the maximum heat value of 205 BTU/h.

Please ensure the following installation conditions:

- Do not install the VIP X1600 close to heaters or other heat sources. Avoid locations exposed to direct sunlight.
- Allow sufficient space for running cables.
- Ensure that the VIP X1600 has is adequate ventilation. Bear the total heat output in mind, particularly when installing multiple units in a switch cabinet.
- When making connections, use only the cables supplied or use appropriate cables immune to electromagnetic interference.
- Position and run all cables so that they are protected from damage, and provide adequate cable strain relief where needed.

Installing VIP X1600 modules

Installing the different VIP X1600 modules in the VIP X1600 base is described in the relevant Quick Installation Guide. Please also take note of the following basic notes when installing a unit.

Caution
Do not install a VIP X1600 module in a different housing and do not operate the unit outside of the VIP X1600 base. The ambient temperature during installation must be between 0 and +50 °C (+32 und +122 °F), and the relative humidity must not exceed 80% (non-precipitating).

Installation sequence and capacity of the VIP X1600 base

You can install up to four VIP X1600 modules in a VIP X1600 base.

Slot 1 must always be the first slot that is populated. The remaining slots can be populated in any order desired. It is possible to mount and remove modules in slots 2 to 4 during operation without interrupting the power supply.

Caution
Disconnect the VIP X1600 base from the power supply before installing a module in **Slot 1**.

Ensure that Slot 1 is populated by a module, even when modifying the installation.

Cooling

The installed VIP X1600 modules generate a high volume of heat during operation. As a result, it is essential that a functional heat dissipation system is in place for problem-free operation of a VIP X1600.

Caution
Whenever the installation is modified, or modules are exchanged or supplemented, it is essential that all unpopulated slots are properly covered on the rear side of the VIP X1600 base.

Rating plates

Every VIP X1600 module has a label on the circuit board containing a printed MAC address by which the module can be uniquely identified. Take note of this MAC address and the location in the VIP X1600 base before installation so that you can later identify the module, even after it has been inserted, for example when performing fault diagnosis.

Removing and exchanging VIP X1600 modules

Installing, removing and exchanging VIP X1600 modules in slots 2 to 4 can be performed during operation.

Caution
Disconnect the VIP X1600 base from the power supply before installing a module in **Slot 1**.

- Before removing a module, terminate all recordings currently running in this module.
- When installing a module, please ensure that the cover is kept for future use.
- When removing a module, it is essential that the corresponding slot be closed with the cover if a module is no longer to be used in this slot.

Installing in a switch cabinet

The VIP X1600 is set up for installing in a 19-inch rack. The necessary installation equipment is contained in the components supplied.

Caution

When installing in a switch cabinet, ensure that there is sufficient ventilation for the unit. There must be at least 5 cm (1.97 in.) of free space to the left and right of the unit and at least 10 cm (3.94 in.) at the rear.

The VIP X1600 generates heat during operation. During installation, please note the maximum heat value of 205 BTU/h.

When mounting additional units, direct contact with the VIP X1600 is permitted provided that the surface temperature of the adjacent units does not exceed +50 °C (+122 °F).

When installing in a switch cabinet, ensure that the screw joints are free of tension and subject to as little mechanical stress as possible. Ensure that the unit and the power supply units have sufficient grounding.

Installing and connecting the VIP X1600

Caution

Only use power supply units approved by Bosch Security Systems to supply power.

– Prepare the switch cabinet in such a manner that you are easily able to insert the VIP X1600 directly at the installation point.

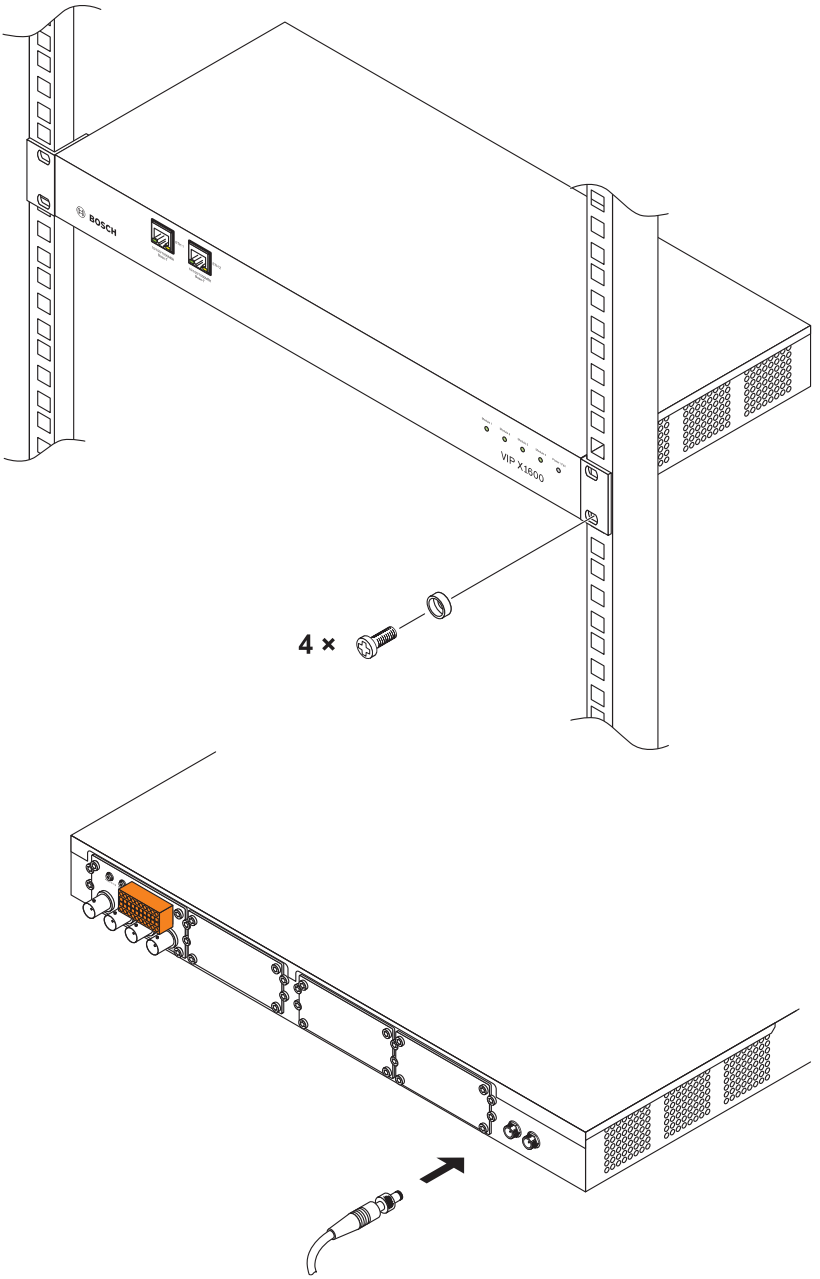
– Place the cage nuts in the corresponding bores or spaces in the switch cabinet frame.

– Lift the VIP X1600 into the switch cabinet frame and insert the fastening screws together with the washers.

– Tighten the screws one after the other and then check once more that all the screws are tight.

– Connect one or two power supply units to the sockets on the rear of the housing. Hand tighten the coupling nuts for the plug.

Installation overview



Connections

Cameras

A maximum of four standard video sources (for example CCTV cameras) can be attached to each VIP X1600 module. Any cameras and other video sources that produce a standard PAL or NTSC signal are suitable.

– Attach the cameras or other video sources using a video cable (75 Ohm, BNC plug) to the BNC jacks **Video In 1** to **Video In 4** for each mounted VIP X1600 module.

– If the video signal is not looped through, termination is performed by software setting if required (see **Video input**, page 46).

Data interface

The bidirectional data interface of each VIP X1600 module is used to control the connected units, for example a dome camera with motorized lens. The range of controllable equipment is expanding constantly. The manufacturers of the relevant equipment can provide specific information on installation and control.

The serial interface supports the RS232, RS422 and RS485 transmission standards. Connection is via the terminal connector. See page 118 for the pin assignment.

Caution
Please take note of the appropriate documentation when installing and operating the unit to be controlled. The documentation contains important safety instructions and information about permitted uses.

Note
A video connection is necessary to transmit transparent data.

Alarm inputs

Each VIP X1600 module contains four alarm inputs for triggering external alarm devices, for example door contacts or sensors. When configured appropriately, an alarm device can for example trigger the unit to automatically establish a connection with a remote station. A zero potential make contact or switch can be used as the actuator.

Note
If possible, use a bounce-free contact system as the actuator.

Connection is via the terminal connector. See page 118 for the pin assignment.

Relay outputs

Each VIP X1600 module contains four relay outputs for switching external devices, for example lights or alarm sirens. You can operate these relay outputs manually while there is an active connection to the device. The output can also be configured to automatically activate sirens or other alarm units in response to an alarm signal.

Caution
A maximum load of 30 V and 2 A may be applied to the relay contacts.

Connection is via the terminal connector. See page 118 for the pin assignment.

Audio connections

The audio versions of the VIP X1600 modules contain two line inputs for a total of four mono inputs, which are automatically assigned to the four camera inputs.

The audio signals are transmitted at the same time as the video signals.

The stereo jack plugs must be connected as follows:

Contact	Audio In 1/2	Audio In 3/4
Tip	Line In 1	Line In 3
Middle ring	Line In 2	Line In 4
Lower ring	Ground	Ground

Network

You can connect the VIP X1600 to a 10/100/1000 Base-T network using a standard UTP category 5 cable with RJ45 connectors. The second Ethernet interface can be used to create a redundant connection to the network.

Note
You cannot create a connection to a second network.

– Connect the VIP X1600 to the network via the **ETH 1** socket.

– Connect the VIP X1600 to a redundant switch or hub on the same network via the **ETH 2** socket.

Direct iSCSI connection

You can connect the VIP X1600 directly to an iSCSI server via the **ETH 2** interface. This connection is an alternative to using the second Ethernet interface as a redundant network connection. Use a UTP category 5 crossed patch cable with RJ45 plugs for a direct connection to an iSCSI server.

Note
You can obtain a list of compatible iSCSI systems from your supplier or directly from Bosch Security Systems. This list is constantly being updated and extended.

Power on/Power off

Power supply

The VIP X1600 does not have a power switch. Power is provided once one or two power supply units have been installed.

Note
Information as to the selection of an appropriate power supply unit can be obtained from your supplier or directly from Bosch Security Systems.

Caution
Only use power supply units approved by Bosch Security Systems. Where necessary, use suitable equipment to ensure that the power supply is free from interference such as voltage surges, spikes or voltage drops.

The unit is ready for operation after the VIP X1600 has been connected to the power supply and the mounted VIP X1600 modules have been initialized.

The operational state of each module is indicated by an LED on the front side of the VIP X1600.

If the network connection has been correctly set up, the green LED of the RJ45 socket **ETH 1** is illuminated. A flashing orange LED indicates that data packets are being transmitted across the network. In the case of a redundant network connection, or a direct connection to an iSCSI server, these signals can also be seen on the LEDs in the RJ45 socket **ETH 2**.

Note
For more information about the LEDs see page 117.

Setup using the Configuration Manager

The **Configuration Manager** program can be found on the product CD which is part of the VIP X1600 base's scope of delivery. This program allows you to implement and set up new video servers in the network quickly and conveniently.

Note

Using the Configuration Manager to set all parameters in the VIP X1600 is an alternative to configuration by means of a Web browser, as described in chapter 5 of this manual.

Installing the program

– Insert the CD in the CD-ROM drive of the computer.

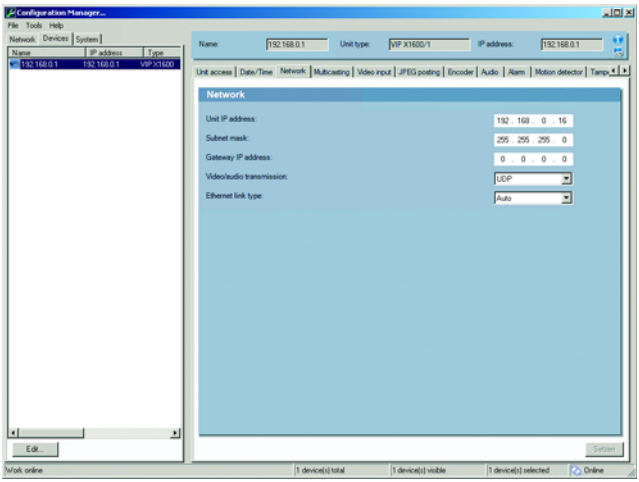
– If the CD does not start automatically, open the **Configuration Manager** directory using Windows Explorer and double click **Setup.exe**.

– Follow the on-screen instructions.

Configuring the VIP X1600 module

You can start the Configuration Manager immediately after installation.

– Double click the icon on the desktop or start the program via the Start menu. After the program has started, the network is immediately searched for compatible video servers.


Configuration Manager...
File Tools Help
Network Devices System
Name IP address Type
192.168.0.1 192.168.0.1 VIP X1600
Edit
Name: 192.168.0.1
Unit type: VIP X1600/1
IP address: 192.168.0.1
Unit access Date/Time Network Multicasting Video input JPEG posting Encoder Audio Alarm Motion detector
Network
Unit IP address: 192 . 168 . 0 . 16
Subnet mask: 255 . 255 . 255 . 0
Gateway IP address: 0 . 0 . 0 . 0
Video/audio transmission: UDP
Ethernet link type: Auto
Set
Work online
1 device(s) total
1 device(s) visible
1 device(s) selected
Online

– You can start the configuration if a VIP X1600 module is shown in the list in the left section of the window. To do this, click the entry for the module.

– Click the **Network** tab in the right section of the window. The current network settings are displayed.

– In the **IP address** field, enter the required IP address (for example 192.168.0.16) and click the **Set** button at the bottom right of the window. The new IP address is valid the next time you start the unit.

– If required, enter a new subnet mask and additional network data.

Note
You must restart to activate the new IP address, a new subnet mask or a gateway address.

Restart

You can trigger the restart directly with the assistance of the Configuration Manager:

– Right click the entry for the module in the list in the left section of the window and select the **Reset** command.

Additional parameters

You can check and set additional parameters with the assistance of the Configuration Manager. You can find detailed information on this in the documentation for this program.

5 Configuration using a Web Browser

Connecting

The integrated HTTP server in every VIP X1600 module provides you with the option to configure the unit over the network with a Web browser. This option is an alternative to configuration using the Configuration Manager program and is considerably richer in function and more convenient than configuration using the terminal program.

Note
Make sure the graphics card is set to 16- or 32-bit color depth and that Microsoft Virtual Machine is installed and activated on your PC. If necessary, you can install the required software and controls from the product CD supplied (see **Components supplied**, page 11).

Instructions for using the Web browser can be found in its online help.

System requirements

- Microsoft Internet Explorer (version 6.0 or higher)
- Monitor resolution 1024 × 768 pixels
- Network access (Intranet or Internet)

Note
Take also note of the information in the **System Requirements** document on the product CD supplied.

Installing MPEG ActiveX

Note
Suitable MPEG ActiveX software must be installed on the computer to allow the live video images to be played back. If necessary, you can install the required software and controls from the product CD supplied (see **Components supplied**, page 11).

– Insert the CD in the CD-ROM drive of the computer. If the CD does not start automatically, open the root directory of the CD in Windows Explorer and double click **MPEGAx.exe**.

– Follow the on-screen instructions.

Establishing the connection

At least the VIP X1600 module in slot 1 must have a valid IP address assigned to operate the VIP X1600 in your network.

The following default address is preset at the factory for all modules:
192.168.0.1

– Start the Web browser.

– Enter the IP address of the VIP X1600 module as the URL. The connection is established, and after a short time you will see the **LIVEPAGE** with the video image.

Note
The screen display can differ from that shown above, depending on the unit variants that you use.

If you do not connect, the device may have reached its maximum number of connections. The maximum number of connections depends on the unit and network configuration.

Protected VIP X1600 module

If the VIP X1600 module is password protected against unauthorized access, the Web browser displays a corresponding message and prompts you to enter the password when you attempt to access protected areas.

Note
The VIP X1600 modules offer the option to limit the extent of access using various authorization levels (see page 34).

– Enter the user name and associated password in the corresponding text fields.

– Click **OK**. If the password is entered correctly, the Web browser displays the page called up.

Configuration menu

You can access the configuration menu via the **SETTINGS** page. This menu displays all the parameters of the unit, arranged in groups.

You can view the current settings by opening one of the configuration screens. You can change the settings by entering new values or by selecting a predefined value from a list field.

All parameter groups are described in this chapter in the order in which they are listed in the configuration menu, from the top of the screen to the bottom.

Caution
The settings in the configuration menu should only be processed or modified by expert users or system support personnel.

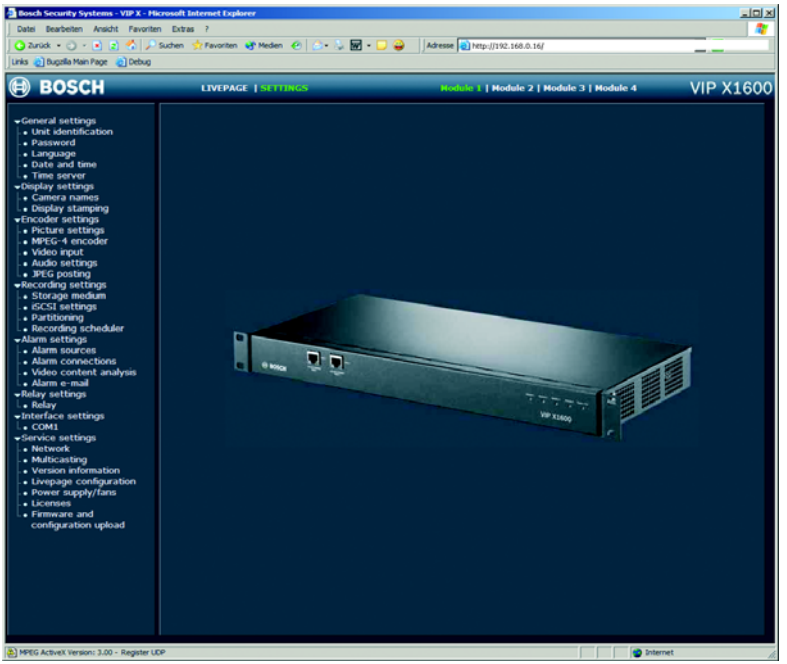
All settings are stored in the memory of the VIP X1600 module so that they are retained even in the event of a power failure.

Start configuration

Click the **SETTINGS** link in the upper section of the window. The Web browser opens a new page with the configuration menu.

Navigation

– Click one of the menu items in the left window margin. The corresponding submenu is expanded.



Note

The screen display can differ from that shown above, depending on the unit variants that you use.

– Click one of the entries in the submenu. The Web browser opens the corresponding page.

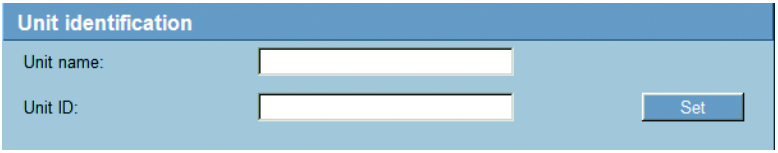
Making changes

Each configuration screen shows the current settings. You can change the settings by entering new values or by selecting a predefined value from a list field.

– After each change, click **Set** to save the change.

Caution
Save each change with the associated **Set** button. Clicking the **Set** button saves the settings only in the current field. Changes in any other fields are ignored.

Unit identification



Unit name:

You can give the unit a name to make it easier to identify. The name makes the task of administering multiple units in larger video monitoring systems easier, for example using the VIDOS program.

Note

The unit name is used for the remote identification of a unit, in the event of an alarm for example. Enter a name that makes it as easy as possible to quickly identify the location.

Unit ID:

Every VIP X1600 module should be assigned a unique identifier that you enter here as an additional means of identification.

Password

A VIP X1600 module is generally protected by a password to prevent unauthorized access to the unit. You can use different authorization levels (**User name:**) to control access.

Note

Proper password protection is only guaranteed when all higher authorization levels are also protected with a password. If a **live** password is assigned for example, a **service** and a **user** password must also be set. As a result, you should always assign passwords beginning with the highest authorization level **service**.

User name:

The VIP X1600 modules operate with three user names: **service**, **user** and **live**, which correspond to different authorization levels.

The **service** user name is the highest authorization level. After entering the correct password, you can access all the functions of the VIP X1600 module and change all configuration settings.

The **user** user name is the middle authorization level. You use it to operate the unit and also to control cameras, but you cannot change the configuration.

The **live** user name is the lowest authorization level. It can only be used to view the live video image and switch between the different live image displays.

Password:

You can define and change a separate password for each user name if you are logged in as **service** or if the unit is not password protected.

Enter the password for the selected user name here.

Confirm password:

Enter the new password a second time to eliminate typing mistakes.

Note

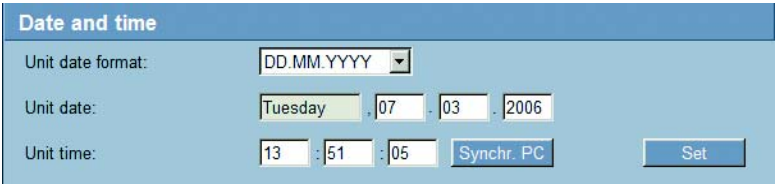
The new password is only saved when you click the **Set** button. You should therefore click the **Set** button immediately after entering and confirming a password, even if you also wish to subsequently assign a password to another user name.

Language

Website language:

Select the language for the user interface here.

Date and time



Unit date format:

Select your required date format.

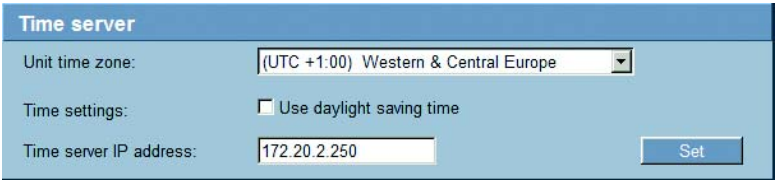
Unit date and **Unit time:**

If there are multiple devices operating in your system or network, it is important to synchronize their internal clocks. For example, it is only possible to identify and correctly evaluate simultaneous recordings when all units are operating on the same time.

– Enter the current date. Since the unit time is controlled by the internal clock, there is no need to enter the day of the week - it is automatically added.

– Enter the current time or click the **Synchr. PC** button to apply the system time from your computer to the VIP X1600 module.

Time server



The VIP X1600 modules can receive the time signal from a time server using the time server protocol (RFC 868), and then use it to set the internal clock. The unit polls the time signal automatically every ten minutes.

The VIP X1600 module in slot 1 is the default time server for the modules in slot 2 to slot 4. In this case, the field **Time server IP address** can be empty for slot 2 to slot 4 (0.0.0.0).

Unit time zone:

Select the time zone in which your system is located.

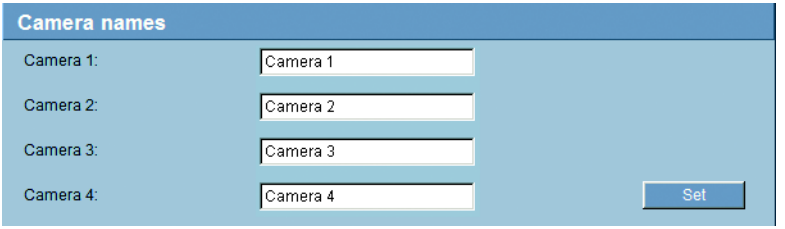
Time settings:

Check this box during daylight saving time to include the time change. Clear the box to switch to winter time.

Time server IP address:

Enter the IP address of a time server that uses the RFC 868 protocol.

Camera names

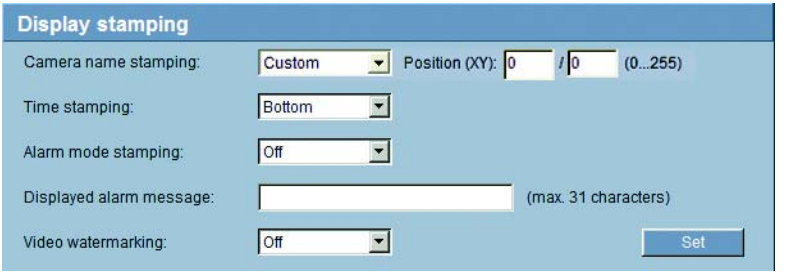


The camera name makes it easier to identify the remote camera location, in the event of an alarm for example. It will be displayed in the video screen if configured to do so (see page 39). The camera name is also used by VIDOS, the software for managing video surveillance systems, and makes it easier to identify the camera.

Camera 1: to **Camera 4:**

Enter a unique, unambiguous name for the camera in this field.

Display stamping



Various overlays or "stamps" in the video image provide important supplementary information. These overlays can be enabled individually and are arranged on the image in a clear manner.

Note

The settings on this page apply to all camera inputs.

Camera name stamping:

This field sets the position of the camera name overlay. It can be displayed at the **Top**, at the **Bottom** or at a position of your choice that you can then specify using the **Custom** option. Or it can be set to **Off** for no overlay information.

Time stamping:

This field sets the position of the time overlay. It can be displayed at the **Top**, at the **Bottom** or at a position of your choice that you can then specify using the **Custom** option. Or it can be set to **Off** for no overlay information.

Alarm mode stamping:

Choose **On** to display a text message overlay in the event of an alarm. It can be displayed at a position of your choice that you can then specify using the **Custom** option. Or it can be set to **Off** for no overlay information.

– Select the desired position from the lists.

– If you select the **Custom** option, additional fields are displayed where you can specify the exact position (**Position (XY):**).

– In the **Position (XY):** fields enter the values for the desired position.

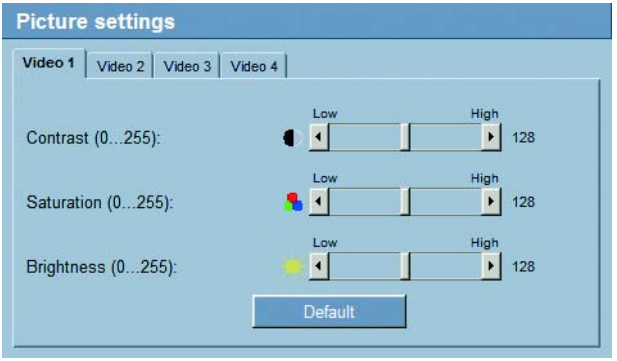
Displayed alarm message:

Enter the message to be displayed for an alarm. The maximum text length is 31 characters.

Video watermarking:

Choose **On** if you wish the transmitted video images to be "watermarked". After activation, all images are marked with a small green rectangle. A red rectangle indicates that the sequence (live or saved) has been manipulated.

Picture settings



You can set the video image of each camera to suit your requirements. The current video image is displayed in the small window next to the slide controls as confirmation. Your changes are effective immediately.

– Click a tab to select the corresponding camera.

– Move the slide control to the required position.

– Click **Default** to reset all settings to their default value.

Contrast (0...255):

You can use this function to adapt the contrast of the video image to your working environment.

Saturation (0...255):

You can use this function to adjust the color saturation so as to make the reproduction of colors on your monitor as realistic as possible.

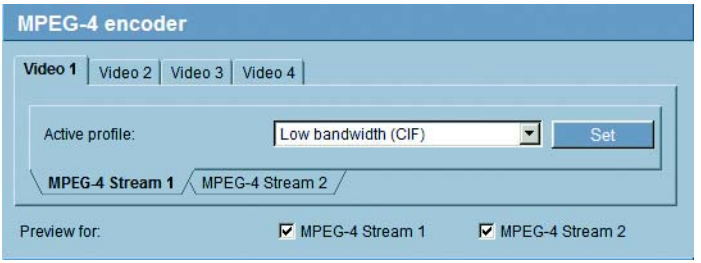
Brightness (0...255):

You can use this function to adapt the brightness of the video image to your working environment.

MPEG-4 encoder

For encoding the video signal you can select two profiles for each encoder (video input) and change the presets for the profiles.

Selecting a profile



You can adapt the MPEG-4 data transmission to the operating environment (for example network structure, bandwidth, data load). To this end, the VIP X1600 module simultaneously generates two data streams (Dual Streaming) for each video input, which compression settings you can select individually, for example one setting for transmissions to the Internet and one for LAN connections.

Note

You must set the parameters for each camera input and for each stream individually. The names **Video 1** to **Video 4** correspond to the names of the video inputs on the unit.

Pre-programmed profiles are available, each giving priority to different perspectives.

- Profile 1: **Low bandwidth (CIF)**
  High quality for low bandwidth connections,
  resolution 352 × 288/240 pixels
- Profile 2: **Low delay (2/3 D1)**
  High quality with low delay,
  resolution 464 × 576/480 pixels
- Profile 3: **High resolution (4CIF/D1)**
  High resolution for high bandwidth connections,
  resolution 704 × 576/480 pixels

- Profile 4: **DSL**
  For DSL connections at 500 kBit/s,
  resolution 352 × 288/240 pixels
- Profile 5: **ISDN (2B)**
  For ISDN connections via two B channels,
  resolution 352 × 288/240 pixels
- Profile 6: **ISDN (1B)**
  For ISDN connections via one B channel,
  resolution 352 × 288/240 pixels
- Profile 7: **Modem**
  For analog modem connections at 20 kBit/s,
  resolution 352 × 288/240 pixels
- Profile 8: **RAM recording**
  Is linked to all RAM recordings,
  resolution 352 × 288/240 pixels

Active profile:

Here you can select the desired profile for each of the two streams. You will see a preview for each data stream in the right section of the window. The preview of the data stream currently selected is marked by a green frame. Various additional items of information regarding data transmission are displayed and continually updated above the previews.

– First, click a tab to select the associated camera.

– Click a tab to select the associated stream.

– Select the desired setting from the list.

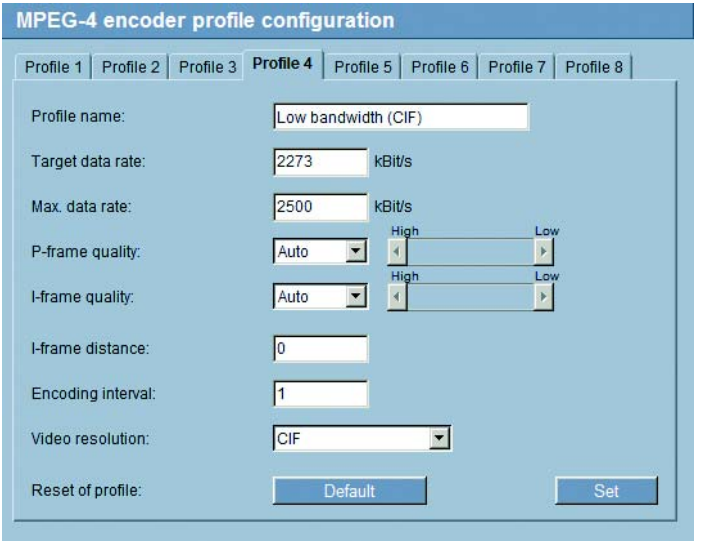
Note
Stream 2 is always transmitted for alarm connections and automatic connections. Bear this fact in mind when assigning the profile.

Preview for:

Select which video data stream should be displayed in the previews. You can deactivate the display of the video images if the performance of the computer is affected too strongly by the decoding of the data streams.

Check the box for the required data stream.

Profile configuration



You can change individual parameter values within a profile and the name. You can switch between profiles by clicking the appropriate tabs.

Caution

The profiles are rather complex. They include a large number of parameters that interact with one another, so it is generally best to use the default profiles. Change the profiles only once you are fully familiar with all the configuration options.

Note

All parameters combine to make up a profile and are dependent on one another. If you enter a setting that is outside the permitted range for a particular parameter, the nearest permitted value will be substituted when the settings are saved.

Profile name:

You can enter a new name for the profile here. The name is then displayed in the list of available profiles in the **Active profile:** field.

Target data rate:

You can limit the data rate for the VIP X1600 module to optimize utilization of the bandwidth in your network. The target data rate should be set according to the desired picture quality for typical scenes with no excessive motion.

For complex images or frequent changes of image content due to frequent movements, this limit can be temporarily exceeded up to the value you enter in the **Max. data rate** field.

Max. data rate:

This maximum data rate is not exceeded under any circumstances. Depending on the video quality settings for the I- and P-frames, this fact can result in skipping of individual images.

The value entered here should be at least 10% higher than the value entered in the **Target data rate** field.

P-frame quality:

This setting allows you to adjust the image quality of the P-frames depending on the movement within the image. The **Auto** option automatically adjusts to the optimum combination of movement and image definition (focus). Selecting **Manual** allows you to set a value between 4 and 31 on the slide control. The value **4** represents the best image quality with, if necessary, a lower frame refresh rate depending on the settings for the maximum data rate. A value of **31** results in a very high refresh rate and lower image quality.

I-frame quality:

This setting allows you to adjust the image quality of the I-frames. The **Auto** option automatically adjusts the quality to the settings for the P-frame video quality. Selecting **Manual** allows you to set a value between 4 and 31 on the slide control. The value **4** represents the best image quality with, if necessary, a lower frame refresh rate depending on the settings for the maximum data rate. A value of **31** results in a very high refresh rate and lower image quality.

I-frame distance:

This parameter allows you to set the intervals in which the I-frames will be coded. **0** means auto mode, whereby the video server inserts I-frames when necessary. An entry of **1** indicates that I-frames are continuously generated. An entry of **2** indicates that only every second image is an I-frame, and **3** only every third image etc.; the frames in between are coded as P-frames.

Encoding interval:

The figure selected here determines the interval at which images are encoded and transmitted. For example, entering **4** means that only every fourth image is encoded, the following three are skipped - this can be particularly advantageous with low bandwidths.

Video resolution:

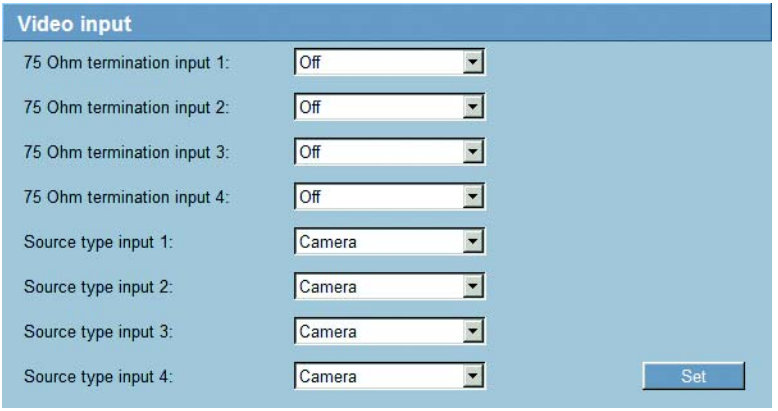
Here you can select the desired resolution for the MPEG-4 video image. The following resolutions are available:

- **QCIF** 176 × 144/120 pixels
- **CIF** 352 × 288/240 pixels
- **1/2 D1** 352 × 576/480 pixels
- **2CIF** 704 × 288/240 pixels
- **4CIF/D1** 704 × 576/480 pixels
- **2/3 D1** 464 × 576/480 pixels

Reset of profile:

Click **Default** to return the profile to the factory default values.

Video input



You can activate the 75 Ohm terminating resistor for each video input on the VIP X1600 module. To loop the video signal through, the terminating resistor must be deactivated. Every video input is closed at the time of delivery.

Note
The numbering follows the labeling of the video inputs on the actual unit.

75 Ohm termination:

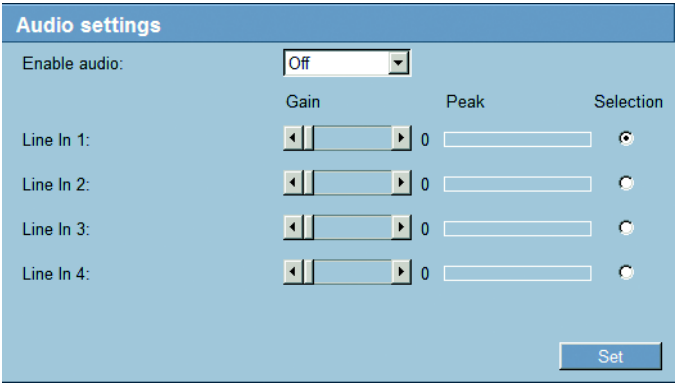
Select **Off** if the video signal is to be looped through.

Source type:

To allow video recorders to be connected as a video source, you can change the characteristic of the video source from the preset value of **Camera** to **Video recorder**. Video recorders require a more tolerant setting for the internal PLL as a result of jitter effects caused by the mechanical components of a video recorder.

Note
In some cases, selecting the **Video recorder** option can lead to an improvement in the video image even with a camera connected.

Audio settings



You can set the gain of the audio signals to suit your specific requirements. The associated video image is shown in the small window next to the slide controls to help you check the audio source and improve assignments.
Your changes are effective immediately.

Note
The numbering of the audio inputs follows the labeling on the unit and the assignment to the respective video inputs. The assignment cannot be changed.

Enable audio:

The audio signals are sent in a separate data stream parallel to the video data, and so increase the network load. The audio data are encoded according to G.711 and require an additional bandwidth of approx. 80 kBit/s per direction for each connection. Select **On** if you wish to enable the audio function.

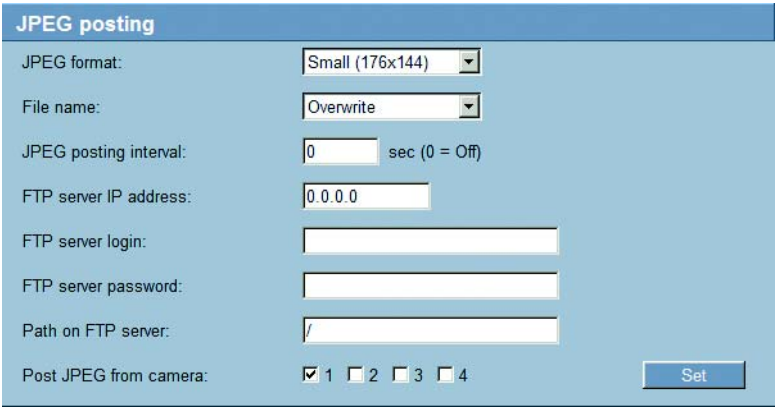
Line In 1: to **Line In 4:**

You can set the gain of the audio signal. The current level is displayed next to the slide control to help you do this. Make sure that the display does not go beyond the green zone during modulation.

Selection

Click one of the option boxes to enable the required audio input.

JPEG posting



You can save individual JPEG images on an FTP server at certain intervals. You can then retrieve these images at a later date to reconstruct alarm events if required.

JPEG format:

Select the resolution you wish the JPEG images to have:

- **Small** 176 × 144 pixels (QCIF)
- **Medium** 352 × 288 pixels (CIF)
- **Large** 704 × 576 pixels (4CIF)

File name:

You can select how file names will be created for the individual images which are transmitted.

- **Overwrite:** The same file name is always used and any existing file will be overwritten with the current file.
- **Increment:** A number from 000 to 255 is added to the file name and automatically incremented by 1. When it reaches 255 it starts again from 000.
- **Date/time suffix:** The date and time are automatically added to the file name. When setting this parameter, please ensure that the date and time of the unit are always correctly set. Example: the file snap021606_124530.jpg was stored on February 16, 2006 at 12.45 p.m. and 30 seconds.

JPEG posting interval:

Enter the interval in seconds at which the images will be sent to an FTP server. Enter zero if you do not want any images to be sent.

FTP server IP address:

Enter the IP address of the FTP server on which you wish to save the JPEG images.

FTP server login:

Enter your login name for the FTP server.

FTP server password:

Enter the password that gives you access to the FTP server.

Path on FTP server:

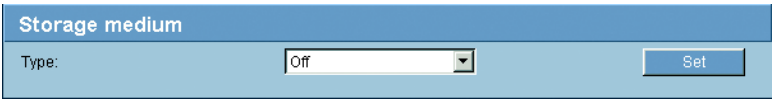
Enter the exact path on which you wish to post the images on the FTP server.

Post JPEG from camera:

Check the box to activate one or more camera inputs for the JPEG image. An enabled camera input is indicated by a check mark.

Note
The numbering follows the labeling of the video inputs on the actual unit.

Storage medium



You can record the images from the cameras connected to the VIP X1600 module in the RAM memory of the unit or in an appropriately configured iSCSI storage device.

Local RAM memory is suitable for short-term recordings and pre-alarm recordings in Ring mode operation.

For long-term, authoritative images, it is essential that you use appropriately sized iSCSI storage.

Type:

Select the desired storage medium to subsequently configure the recording parameters.

If you select RAM storage as the storage medium, the recording is started using Profile 8 immediately after clicking the **Set** button. You can modify the settings of the relevant profile on the page **MPEG-4 encoder** (see page 41). First, however, you have to set the **Type** to **Off** to stop all running recordings.

The preconfigured setting for Profile 8 is: continuous ring recording with 8 MB storage size per channel and approx. 1 image per second in CIF format.

Caution

If you switch the storage medium from **iSCSI server** to **RAM recording**, the settings on the page **iSCSI settings** will be lost and can only be restored by reconfiguring them.

Storage information

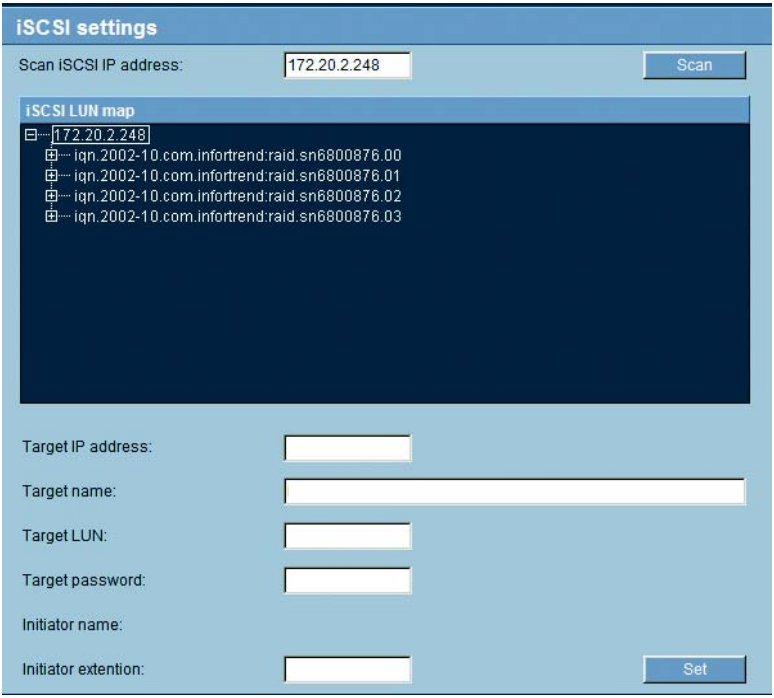
The status of the currently selected storage medium and the data throughput are displayed here for information. You cannot change any of these settings.

– Click **Advanced** to view a status report with logged actions. A new window will open.

– In this window, click **Delete** to delete all entries. The entries will be deleted immediately; you cannot undo this process.

– Click the **Close** button to close the window.

iSCSI settings



If you select type **iSCSI server** as the storage medium, you then need to set up a connection to the desired iSCSI storage device and set the configuration parameters.

Note
The storage device selected must adhere to the iSCSI specification, be available on the network and be completely set up. Amongst other things, it must have an IP address and be divided into logical drives (LUN).

Scan iSCSI IP address:

– Enter the IP address of the required iSCSI server here.

– Click the **Scan** button. The connection to the IP address will be established. The **iSCSI LUN map** field contains the corresponding logical drives.

iSCSI LUN map

The LUN map displays the logical drives configured for the iSCSI storage device. The current user is displayed for each drive.

– Double-click a free drive (LUN). The associated information is called up and automatically displayed in the fields below the map.

– If the logical drive is password protected, you must first enter the password in the **Target password** field and click the **Set** button.

Note
In cases where the information cannot be read due to the network topology, you must enter the data manually, so that the VIP X1600 module can access the drive. In this case you should ensure that the entries correspond exactly with the configuration of the iSCSI device.

– After entering all the settings in the relevant fields, click **Set**. The VIP X1600 module attempts to create a connection to the required drive using this data.

As soon as a connection has been established, the selected drive is used for recordings.

Target IP address:

Enter the IP address of the required iSCSI server here.

Target name:

Enter the name of the required drive.

Target LUN:

Enter the LUN of the required drive.

Target password:

If the drive is password protected, enter the password.

Note
You may not enter a new password. This is only possible by configuring the iSCSI storage device.

Initiator name:

The initiator name is automatically displayed after a connection has been established.

Initiator extension:

Enter the initiator extension. For the sake of clarity, you can enter a name or the existing extension with a comment, for example "– Camera 2"

Decoupling the drive used

Each drive can only be associated with one user. If a drive is already being used by another person, you can decouple the drive and connect the drive with the VIP X1600 module.

– Double-click a drive that is already being used in the LUN map. You will see a warning message.

– Confirm the decoupling of the current user. The drive is released and can be connected to the VIP X1600 module.

Storage information

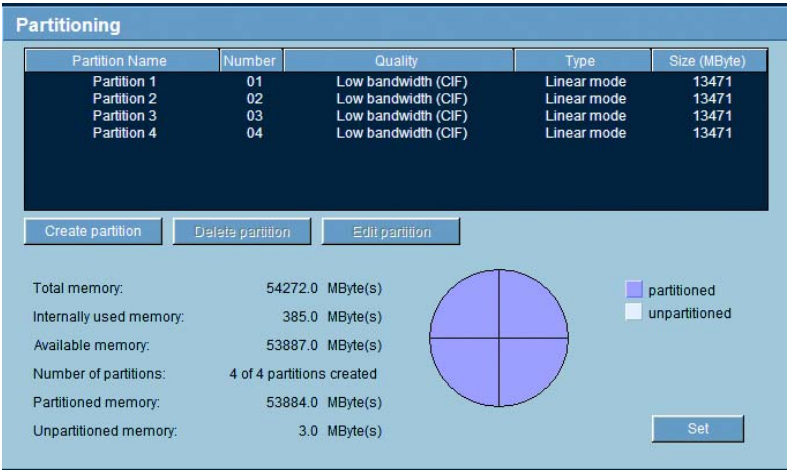
The status of the currently selected storage medium and the data throughput are displayed here for information. You cannot change any of these settings.

– Click **Advanced** to view a status report with logged actions. A new window will open.

– In this window, click **Delete** to delete all entries. The entries will be deleted immediately; you cannot undo this process.

– Click the **Close** button to close the window.

Partitioning



Four partitions can be set up for recordings of the cameras connected to the VIP X1600 module, in a similar manner to the partitioning often found on computer hard drives. Parameters such as size, quality and type of video recording or compression standard used can be specified for each partition. Modifying these parameters leads to reorganization, during which stored data is lost.

The unit requires a dedicated partition for the recordings of each connected camera. Each partition is linked to its own encoder or camera input: camera input **Video 1** with partition number **01**, camera input **Video 2** with partition **02** etc. This assignment cannot be modified. As a result, all numbers are always displayed in the list, regardless of whether a corresponding partition is available or has been deleted. All four potential partitions need to be configured in order to record four cameras. Four partitions are already preconfigured in the default configuration.

All partitions are listed in the table on the page **Partitioning** together with their partition name, number, quality type and size.

In addition, the page provides you with an overview of the drive data; for example total memory and number of partitions created. A pie chart indicates how much memory space is partitioned for recordings.

Creating a partition

Caution

Modifications to the size or number of partitions lead to the entire hard drive being reorganized and the loss of all sequences stored on the drive. Consequently, you should check the recordings before any modification to the parameters mentioned and back up important sequences on the computer's hard drive.

Note

If the maximum number of partitions has been set up, you can only create a new partition after deleting at least one of the existing partitions (see page 59).

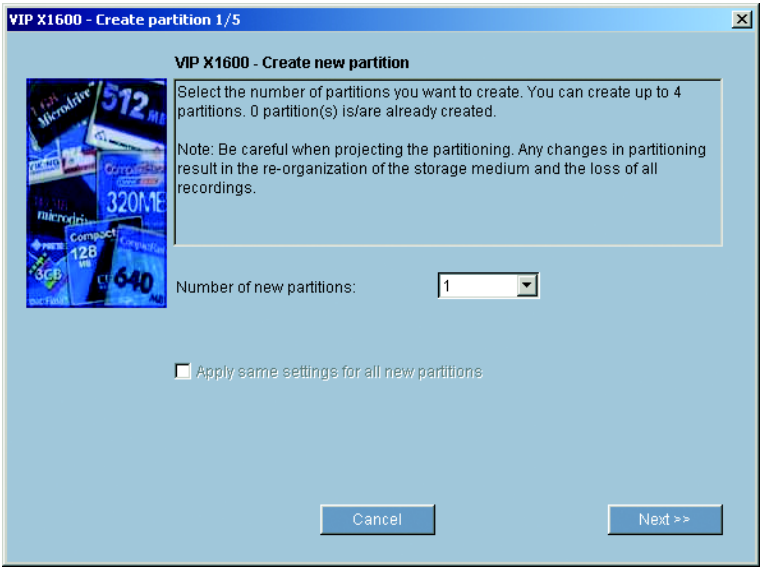
Creating a new partition is performed using separate windows in which information is presented to you and you are led step by step through the necessary settings.

The process must be completed for each partition to be set up on the hard drive. After startup, you can select the total number of partitions to be set up. The setup process is then started as often as is necessary to configure all partitions.

Note

You can create multiple partitions of the same type in one process. To do this, check the box **Apply same settings for all new partitions** in the first window.

– Click the **Create partition** button to start the assistant for creating partitions. The first window appears.


VIP X1600 - Create partition 1/5
VIP X1600 - Create new partition
Select the number of partitions you want to create. You can create up to 4 partitions. 0 partition(s) is/are already created.
Note: Be careful when projecting the partitioning. Any changes in partitioning result in the re-organization of the storage medium and the loss of all recordings.
Number of new partitions:
1
Apply same settings for all new partitions
Cancel
Next >>

– You should always first read the information text in the upper section of the window.

– Click in the text fields to enter values or use the other controls that are available, such as buttons, checkboxes or list fields.

– Click the **Next>>** button in the lower section of the window to continue with the next step.

– Click the **<<Back** button in the lower section of the window to view the previous step again.

– Click the **Cancel** button to cancel the process and close the help.

Saving changes

After you have made all necessary settings, you must transfer the settings to the unit and save them. To do this, you need to quit the help in the last window using the **Finish** button.

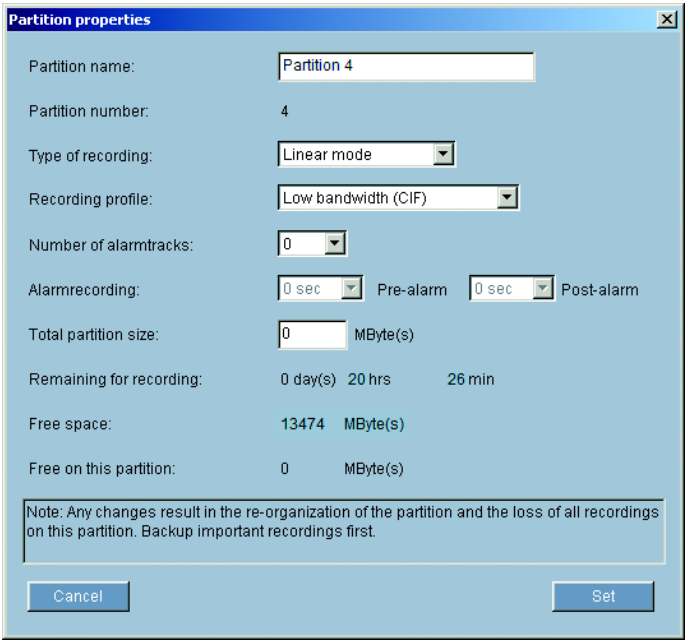
Caution

All modifications to settings are only effective if you complete the configuration in the last window by clicking **Finish**.

– Switch to the last window if necessary.

– Click **Finish** to complete the configuration. All settings are now transferred to the unit and subsequently become effective.

Editing a partition



You can modify the configuration of a partition at any time.

Caution

All modifications result in the re-organization of the partition and the loss of all sequences on this partition. Changes to the size of a partition (**Total partition size**) lead to the entire hard drive being reorganized and the loss of all recordings stored on the drive. Consequently, you should back up all important sequences on the computer's hard drive before modifying the partition.

You can perform the required modifications in the **Partition properties** window.

– In the list, click the partition that you want to modify in order to select this partition.

– Click the **Edit partition** button. A new window with the entries for the selected partition is opened.

– Enter the necessary changes.

– Click the **Set** button to save the modifications.

– After closing the window, click the **Set** button in the main window to transfer the changes to the unit and to save them.

Deleting partitions

You can delete a partition at any time.

Caution
Deleting a partition leads to the entire hard drive being reorganized and loss of all sequences stored on the drive. Consequently, you should check the recordings before deleting any partition and back up important sequences on the computer's hard drive.

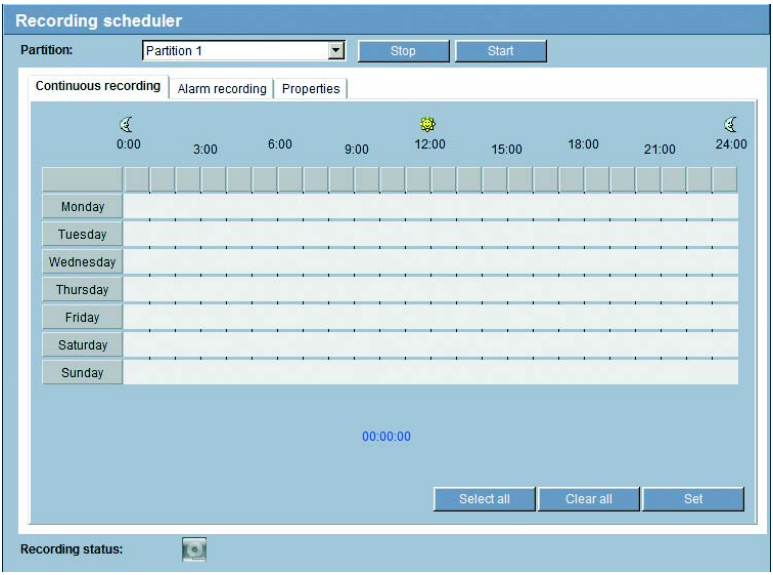
– Click a partition in the list in order to select the partition.

– Click the **Delete partition** button to delete the highlighted partition. The line containing the associated number remains in the display, the partition name is deleted and the size is indicated as **0**.

– Click the **Set** button to transfer the changes to the unit and to save them.

Recording scheduler

Set all parameters for recording. Recording can be performed continuously or in the case of an alarm.



Partition:

Select the partition in which you want to record. The recording is performed for every video input in the respective partition.

Activating a partition for recording

After configuration, you can activate the partition for recording by clicking the **Start** button.

After starting, the pages Continuous recording, Alarm recording and the Properties for the activated partitions are displayed in gray, and the configuration cannot be modified.

The graphic in the lower section of the pages indicates this partition's recording activity. You will see an animated graphic while recording is taking place. You can terminate recording at any time and deactivate one, multiple or all partitions.

– Click the **Start** button to activate the currently selected partition for recording.

– Click the **Stop** button to deactivate the currently selected partition for recording. Recordings that are currently running will be interrupted and the configuration can be modified.

Continuous recording

You can specify the times during which continuous recording to the hard drive should take place.

Separate selection fields per partition are available for each day of the week, allowing settings to be made per camera input. You can select up to 16 individual recording time intervals for each day of the week.

Note
If a time interval has already been selected for alarm recording, you cannot select it for continuous recording (see **Alarm recording**, page 62).

– Left-click the point in the schedule at which recording should start and hold the button down.

– Drag the selected field to the desired recording end and then release the mouse key.

– Right-click a highlighted time interval to delete it.

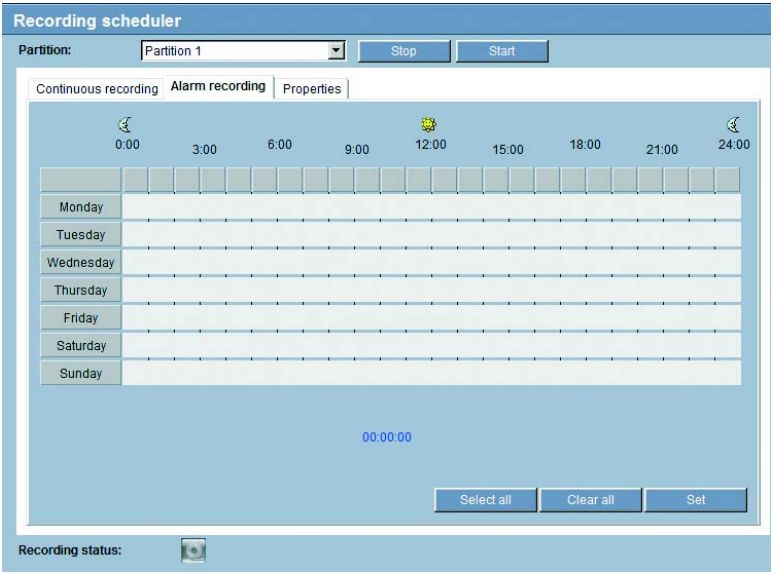
– Click the **Select all** button to highlight all time intervals.

– Click the **Clear all** button to delete all highlighted time intervals.

Recording status:

The graphic indicates the recording activity in this partition. You will see an animated graphic while recording is taking place.

Alarm recording



You can specify the times during which images from the cameras selected should be recorded in the event of an alarm.

In a similar manner to continuous recording, separate selection fields are available for each partition, and consequently for each camera input. You can select up to 16 individual recording time intervals for each day of the week. Alarm recording occurs only during the highlighted time intervals.

Note
If a time interval has already been selected for continuous recording, you cannot select it for alarm recording (see **Continuous recording**, page 61).

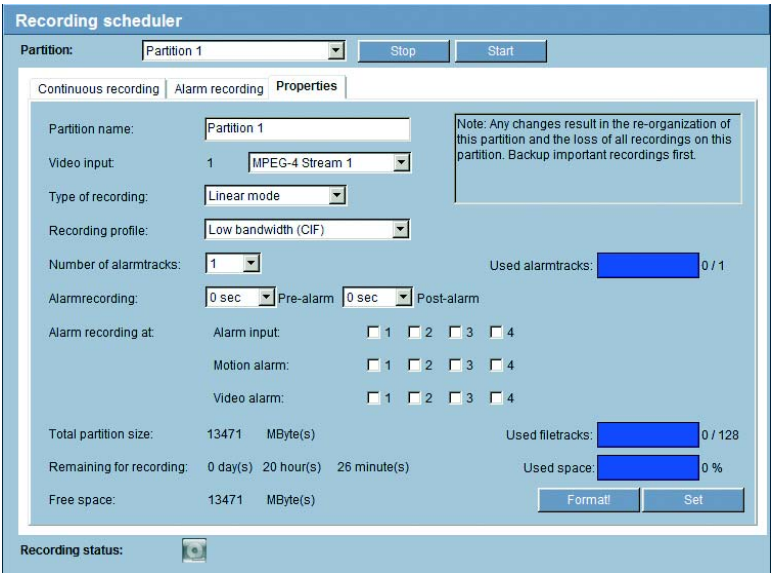
Caution
Alarm tracks must be set up in the required partition for alarm recording (see **Number of alarm tracks**, page 63).

The unit uses a special recording mode during alarm recording for optimal usage of storage capacity: as soon as a time gap for alarm recording begins, a recording is continuously made on one segment, which is the size of a complete alarm sequence (pre- and post-alarm time).

This segment in the partition functions in a similar manner to a ring buffer and is overwritten until an alarm is actually triggered. Recording occurs on the segment only for the duration of the preset post-alarm time and a new segment subsequently used in the same manner.

This ensures that the alarm recorded is always secured for its entire duration and the space required to save each alarm recording is easy to calculate.

Properties



You can view the current properties for the partition selected in each case directly in the recording scheduler and modify them if necessary. You can also activate the alarms that should trigger recording. Similarly, you can also select the profile for recording.

Caution

All modifications result in the re-organization of the partition and the loss of all sequences on this partition. Changes to the size of a partition (**Total partition size**) lead to the entire hard drive being reorganized and the loss of all recordings stored on the drive. Consequently, you should back up all important sequences on the computer's hard drive.

Partition name:

You can enter a new name for the partition.

Video input:

The partition number (= number of the video input) is displayed for information purposes.

– Select the required data stream from the list field.

Type of recording:

Select the required recording type.

In the case of **Ring mode** the recording proceeds continuously. If the maximum hard drive space has been reached, the oldest recordings are automatically overwritten.

In the case of **Linear mode** the recording proceeds until the entire hard drive space is full. The recording is then stopped until old recordings have been deleted.

Recording profile:

Select the profile that is to be active during recording. You can view and modify the parameters for the profile (see **MPEG-4 encoder**, from page 43).

Note

The recording profile can deviate from the standard setting **Active profile** for the video input set and is only used during an active recording.

Number of alarm tracks:

Select the number of alarm tracks to be used in the partition. One alarm event can be recorded in each alarm track. Accordingly, the number of alarms entered can be recorded and archived. A partition can contain a maximum of 128 alarm recordings.

If the option **Ring mode** (see page 64) is set for a partition, the latest alarm recordings are always saved in the preset number. If the option **Linear mode** is selected, the recording is stopped as soon as the total number of alarm tracks has been recorded.

Already **Used alarm tracks** are displayed in the graphic next to the parameter.

Alarm recording:

Select which time intervals are to be covered for **Pre-alarm** and **Post-alarm**.

Alarm recording at:

You can select the alarm sensor that is to trigger a recording. You can also use the motion and video alarm for a camera to trigger the alarm recording by another camera.

Note

The alarm sensor must be active to be able to trigger the recording. The alarm inputs and video loss alarms are activated on the page **Alarm sources** (see page 67). The motion alarms are configured and activated for each camera on the page **Video content analysis** (see page 70).

– Check the box for the alarm sensor that is to trigger a recording. The alarm sensors selected are indicated by a check mark.

Note

The numbering of the check boxes for the alarm inputs corresponds to the labeling of the alarm inputs on the VIP X1600 module. For the motion and video loss alarm, the numbering corresponds to the labeling of the video inputs.

Total partition size:

This displays how much storage space the partition occupies on the drive.

Already **Used file tracks** are displayed in the graphic next to the parameter.

Remaining for recording:

This displays the maximum remaining recording time. The value is automatically updated after the parameters have been modified.

Free space:

This displays how much space is still available in the partition.

Used space:

This displays how much space is already used in the partition.

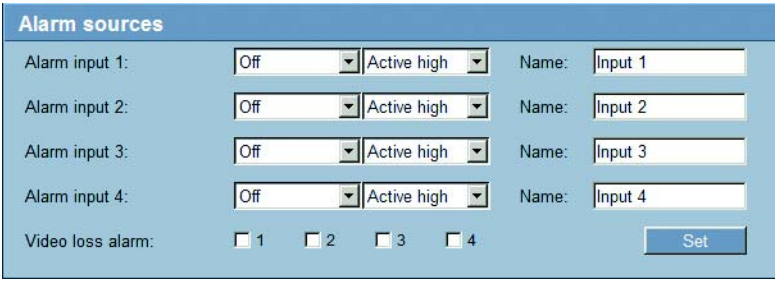
Format!

You can delete all recordings in a partition at any time.

Caution
Check the recordings before deleting and back up important sequences on the computer's hard drive.

– Click the **Format!** button to delete all recordings in the currently selected partition.

Alarm sources



You can configure the potential alarm triggers for the VIP X1600 module (for example the alarm inputs).

Alarm input 1: to **Alarm input 4:**

Select the option **On** to activate the alarm by the corresponding external alarm sensor. Otherwise, select **Off**.

Select **Active high** if the alarm is to be triggered by closing the contact.
Select **Active low** if the alarm is to be triggered by opening the contact.

Name:

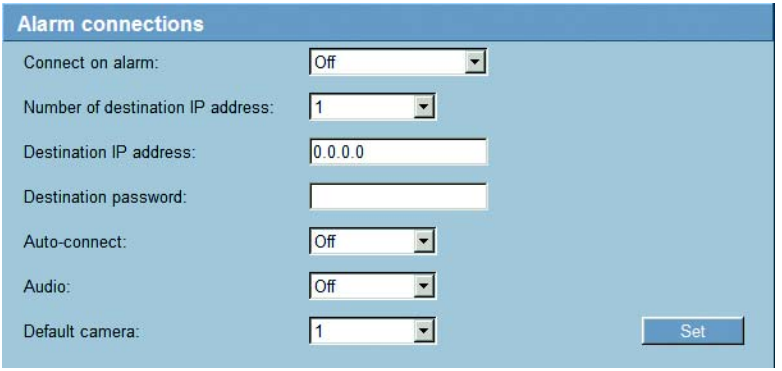
You can enter a name for each alarm input, which is then displayed below the icon for the alarm input on the **LIVEPAGE** if configured accordingly (see **Live-page configuration**, page 87).

Video loss alarm:

Activate the checkbox if you want an interruption of the video signal to also trigger an alarm. A selected video input is indicated by a check mark.

Note
The numbering follows the labeling of the video inputs on the actual unit.

Alarm connections



You can select how the VIP X1600 module responds to an alarm. In the event of an alarm, the unit can automatically connect to a predefined IP address. You can enter up to 10 IP addresses which the VIP X1600 module will contact in order in the event of an alarm, until a connection is made.

Connect on alarm:

Select **On** so that the VIP X1600 module automatically connects to a predefined IP address in the event of an alarm.

By setting **Follows input 1** the unit maintains the connection that has been automatically established for as long as an alarm exists on alarm input 1.

Note
Stream 2 is always transmitted for alarm connections. Bear this fact in mind when assigning the profile (see page 42).

Number of destination IP address:

Specify the numbers of the IP addresses to be contacted in the event of an alarm. The unit contacts the remote stations one after the other in the numbered sequence until a connection is made.

Destination IP address:

For each number enter the corresponding IP address for the desired remote station.

Destination password:

If the remote station is password protected, enter the password here.

Auto-connect:

Select the **On** option to automatically re-establish a connection to one of the previously specified IP addresses after each re-start, after a connection break-down or after a network failure.

Note
Stream 2 is always transmitted for automatic connections. Bear this fact in mind when assigning the profile (see page 42).

Audio:

Select the option **On** if you wish to additionally transmit a standalone G.711 encoded audio stream with alarm connections.

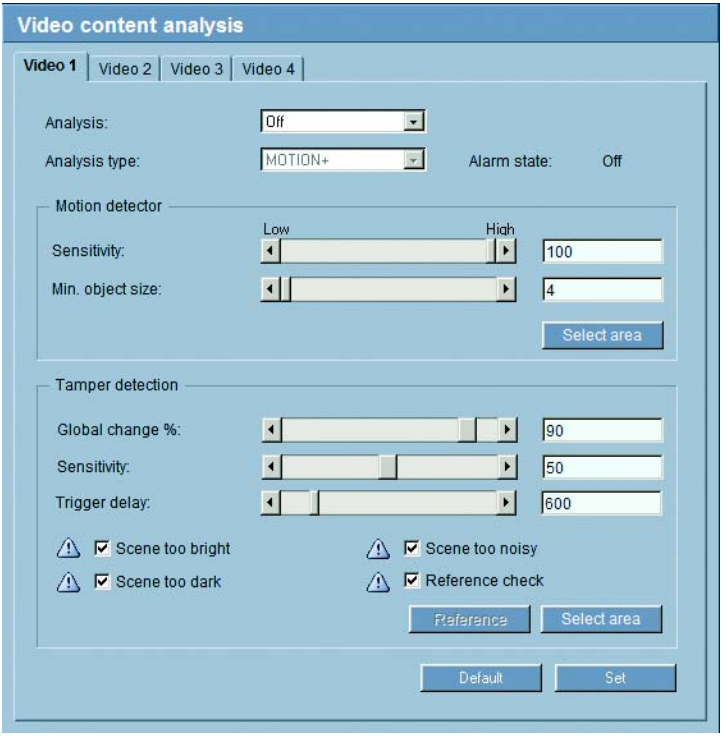
Note
Audio signals are only transmitted if the audio function has been activated on the **Audio settings** page (see page 47).

Default camera:

Here you can select the camera whose image will be automatically displayed first on the receiver when the alarm connection is made. Depending on the system configuration, the receiver can then select the other cameras as well.

Note
The numbering follows the labeling of the video inputs on the actual unit.

Video content analysis



The VIP X1600 modules contain an integrated video content analysis (abbreviation: VCA), which can detect and analyze changes in the signal. Such changes can be due to movements in the camera's field of view.

You can configure the video content analysis for each video input individually.

– Click one of the tabs to open the configuration of the corresponding video input.

– Enter the desired settings.

– If necessary, click the **Default** button to return all settings to their default values.

Analysis:

Select the option **On** to activate the video content analysis.

As soon as the video content analysis is activated, metadata are created. Depending on the **Analysis type** selected and the relevant configuration, additional information overlays the video image in the small window. If you have selected **MOTION+** analysis, for example, the sensor fields will light up in which movement is registered.

Note
On the **Livepage configuration** page, you can enable additional information overlays for the live video image too (see page 88).

Analysis type:

Select the required analysis algorithm. By default, only **MOTION+** is available – this offers a motion detector and essential recognition of tampering. The current alarm status is displayed for information purposes.

Note
Additional analysis algorithms with comprehensive functions such as IVMD are available from Bosch Security Systems.

Motion detector

For the detector to function, the following conditions must be met:

- Analysis must be activated.
- At least one sensor field must be activated.
- The individual parameters must be configured to suit the operating environment and the desired responses.
- The sensitivity must be set to a value greater than zero.

Caution
Reflections of light (off glass surfaces, etc.), switching lights on or off or changes in the light level caused by cloud movement on a sunny day can trigger unintended responses from the motion detector and generate false alarms. Run a series of tests at different times of the day and night to ensure that the video sensor is operating as intended.

For indoor surveillance, ensure constant lighting of the areas during the day and at night.

Sensitivity

The basic sensitivity of the motion detector can be adjusted for the environmental conditions to which the camera is subject.

The sensor reacts to variations in the brightness of the video image. The darker the observation area, the higher the value that must be selected.

Min. object size:

You can specify the number of sensor fields that a moving object must cover to generate an alarm. This setting prevents objects that are too small from triggering an alarm.

A minimum value of **4** is recommended. This value corresponds to four sensor fields.

Selecting the area

The areas of the image to be monitored by the motion detector can be selected. The video image is subdivided into 858 square sensor fields. You can activate or deactivate each of these fields individually. If you wish to exclude particular regions of the camera's field of view from monitoring due to continuous movement (by a tree in the wind, etc.), the relevant fields can be deactivated.

– Click **Select area** to configure the sensor fields. A new window will open.

– If necessary, click **Clear all** first to clear the current selection (fields marked red).

– Left-click the fields to be activated. Activated fields are marked red.

– If necessary, click **Select all** to select the entire video frame for monitoring.

– Right-click any fields you wish to deactivate.

– Click **OK** to save the configuration.

– Click the close button (**X**) in the window title bar to close the window without saving the changes.

Tamper detection

You can reveal the tampering of cameras and video cables by means of various options. Run a series of tests at different times of the day and night to ensure that the video sensor is operating as intended.

Note
The options for tamper detection can only be set for fixed cameras. Dome cameras or other motorized cameras cannot be protected in this manner as the movement of the camera itself causes changes in the video image that are too great.

Global change %:

You can define the percentage of sensor fields that must register a change simultaneously before generating an alarm. This setting is independent of the sensor fields selected under **Select area**.

This option allows you to detect, independently of motion alarms, manipulation of the orientation or location of a camera resulting from turning the camera mounting bracket, for instance.

Sensitivity

Note
This and the following parameter are only accessible if the reference check is activated.

The basic sensitivity of the tamper detection can be adjusted for the environmental conditions to which the camera is subject.

The algorithm reacts to the differences between the reference image and the current video image. The darker the observation area, the higher the value that must be selected.

Trigger delay:

You can set delayed alarm triggering. The alarm is only triggered after a set time interval in seconds has elapsed and then only if the triggering condition still exists. If the original condition has been restored before this time interval elapses, the alarm is not triggered. This allows you to avoid false alarms triggered by short-term changes, for example cleaning activities in the direct field of vision of the camera.

Scene too bright

Activate this function if tampering associated with exposure to extreme light (for instance, shining a flashlight directly on the objective) should trigger an alarm. The average brightness of the scene provides a basis for recognition.

Scene too dark

Activate this function if tampering associated with covering the objective (for instance, by spraying paint on it) should trigger an alarm. The average brightness of the scene provides a basis for recognition.

Scene too noisy

Activate this function if tampering associated with EMC interference (noisy scene as the result of a strong interference signal in the vicinity of the video lines), as an example, should trigger an alarm.

Reference check

You can save a reference image that is continuously compared with the current video image. If the current video image in the marked areas differs from the reference image, an alarm is triggered. This allows you to detect tampering that would otherwise not be detected, for example if the camera is turned.

– Click **Reference** to save the currently visible video image as a reference.

– Click **Select area** and select the areas in the reference image that are to be monitored.

– Check the box **Reference check** to activate the on-going check. The stored reference image is displayed in black and white below the current video image, and the selected areas are marked in red.

Selecting the area

You can select the image areas in the reference image that are to be monitored. The video image is subdivided into 858 square fields. You can activate or deactivate each of these fields individually.

Note
Select only those areas for reference monitoring in which no movement takes place and that are always evenly lit, as false alarms could otherwise be triggered.

– Click **Select area** to configure the sensor fields. A new window will open.

– If necessary, click **Clear all** first to clear the current selection (fields marked red).

– Left-click the fields to be activated. Activated fields are marked red.

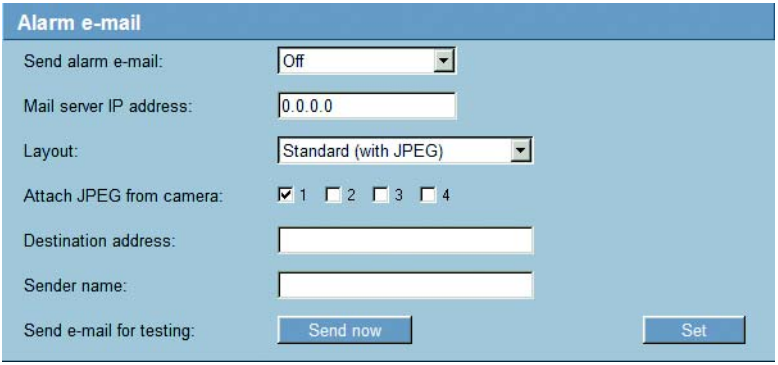
– If necessary, click **Select all** to select the entire video frame for monitoring.

– Right-click any fields you wish to deactivate.

– Click **OK** to save the configuration.

– Click the close button (**X**) in the window title bar to close the window without saving the changes.

Alarm e-mail



As an alternative to automatic connecting, alarm states can also be documented by e-mail. In this way it is possible to notify a recipient who does not have a video receiver. In this case the VIP X1600 module automatically sends an e-mail to a previously defined e-mail address.

Send alarm e-mail:

Select **On** if you want the unit to automatically send an alarm e-mail in the event of an alarm.

Mail server IP address:

Enter the IP address of a mail server that operates on the SMTP standard (Simple Mail Transfer Protocol). Outgoing e-mails are sent to the mail server via the address you entered. Otherwise leave the box blank (0.0.0.0).

Layout:

You can select the data format of the alarm message.

- **Standard (with JPEG):** e-mail with JPEG image file attachment.
- **SMS:** e-mail in SMS format to an e-mail-to-SMS gateway (for example to send an alarm by cellphone) without an image attachment.

Caution

When a cellphone is used as the receiver, make sure to activate the e-mail or SMS function, depending on the format, so that these messages can be received. You can obtain information on operating your cellphone from your cellphone provider.

Attach JPEG from camera:

Click the checkbox to select the cameras from which JPEG images are sent. An enabled video input is indicated by a check mark.

Destination address:

Enter the e-mail address for alarm e-mails here. The maximum address length is 49 characters.

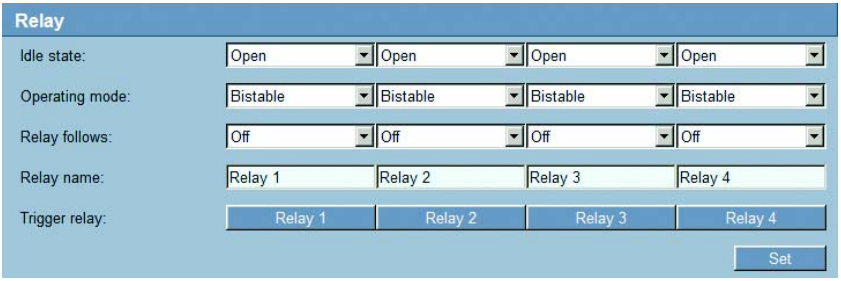
Sender name:

Enter a unique name for the e-mail sender, for example the location of the unit. This will make it easier to identify the origin of the e-mail.

Send e-mail for testing:

Test the e-mail function by clicking the **Send now** button. An alarm e-mail is immediately created and sent.

Relay



You can configure the switching behavior of the relay outputs. For each relay, you can specify an open switch relay (normally closed contact) or a closed switch relay (normally open contact).

You can also specify whether the output should operate as a bistable or monostable relay. In bistable mode, the triggered state of the relay is maintained. In monostable mode, you can set the time after which the relay will return to the idle state.

You can select different events that automatically activate the output. It is possible, for example, to turn on a floodlight by triggering a motion alarm and then turning the light off again when the alarm has stopped.

Idle state:

Select **Open** if you want the relay to operate as an NO contact, or select **Closed** if the relay is to operate as an NC contact.

Operating mode:

Select an operating mode for the relay.

For example, if you want an alarm-activated lamp to stay on after the alarm ends, select **Bistable**. If you wish an alarm-activated siren to sound for 10 seconds, for example, select **10 sec.**

Relay follows:

If required, select a specific event that will trigger the relay. The following events are possible triggers:

- **Off**
  Relay is not triggered by events
- **Connection**
  Trigger whenever a connection is made
- **Video alarm 1**
  Trigger by interrupting the video signal

Note
The relay is only triggered by an interruption in the video signal at input **Video In 1**, and not by interruptions in the other video signals.

- **Motion alarm 1**
  Trigger by means of motion alarm as configured on the page **Video content analysis** for Video 1 (see page 70)
- **Local input 1**
  Trigger by external alarm input 1
- **Remote input 1**
  Trigger by remote station's switching contact (only if a connection exists)

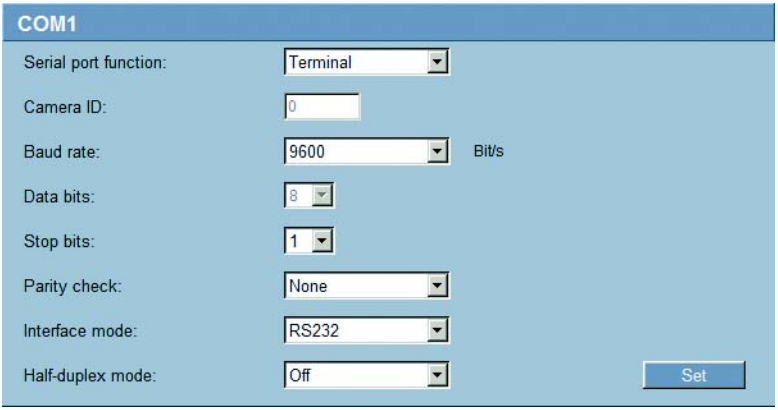
Relay name:

You can assign a name for the relay here. The name is shown on the button next to **Trigger relay**. The Livepage can also be configured to display the name under the relay icon.

Trigger relay:

Click the button to trigger the relay manually (for testing or to operate a door opener, for example).

COM1



You can configure the serial interface parameters (orange terminal block) to meet your requirements.

Note

If the VIP X1600 module is working in multicast mode (see page 84), the first remote location to establish a video connection to the unit is also assigned the transparent data connection. However after about 15 seconds of inactivity the data connection is automatically terminated and another remote location can exchange transparent data with the unit.

Serial port function:

Select a controllable unit from the list. If you wish to use the serial port to transmit transparent data, select **Transparent**. Select **Terminal** if you wish to operate the unit from a terminal.

Note

After selecting a unit, the remaining parameters in the window are set automatically and should not be changed.

Camera ID:

If necessary, enter the ID of the peripheral you wish to control (for example a dome camera or pan/tilt head).

Note
If you are using a Bosch AutoDome, remember that the value of the Camera ID must always be selected one less than the Bosch camera number (for example: Bosch camera number: 1, Camera ID: 0).

Baud rate:

Select the value for the transmission rate in bit/s.

Data bits:

The number of data bits per character cannot be changed.

Stop bits:

Select the number of stop bits per character.

Parity check:

Select the type of parity check.

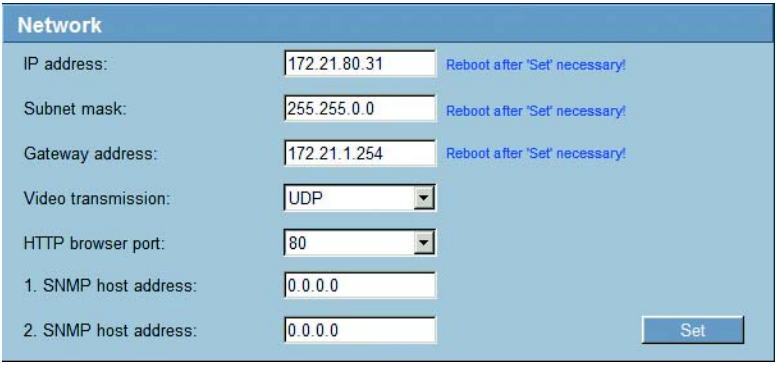
Interface mode:

Select the desired protocol for the serial interface.

Half-duplex mode:

Choose the setting appropriate for your application.

Network



The settings in this screen are used to integrate the VIP X1600 module into an existing network.

Caution
Changes to the IP address, subnet mask or gateway address are transferred to the unit by clicking **Set**. However, they only take effect after the unit is restarted.

– Click **Set** after entering a new IP address.

– To restart the device, enter the old IP address followed by `/reset` (for example `192.168.0.16/reset`) in the address bar of your Web browser.
The VIP X1600 module restarts, after which it can only be accessed at the new IP address.

IP address:

Enter the desired IP address for the VIP X1600 module. The IP address must be valid for the network.

Subnet mask:

Enter the appropriate subnet mask for the selected IP address here.

Gateway address:

If you want the unit to establish a connection to a remote location in a different subnet, enter the IP address of the gateway here. Otherwise leave the box blank (0.0.0.0).

Video transmission:

If the unit is operated behind a firewall, **TCP (HTTP port)** should be selected as the transfer protocol. For use in a local network, select **UDP**.

Caution
Multicast operation is only possible with the UDP protocol. The TCP protocol does not support multicast connections.

Note
The MTU value in UDP mode is 1514 bytes.

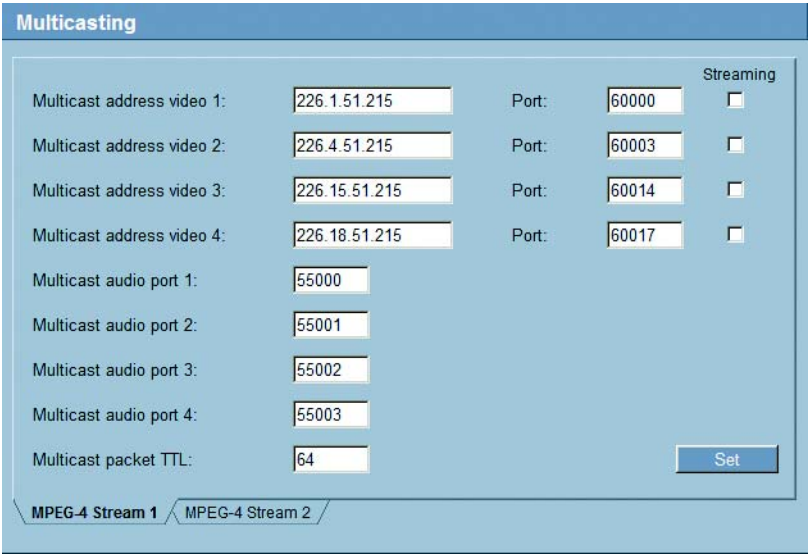
HTTP browser port:

Select a different HTTP browser port from the list if required. The default HTTP port is 80.

1. SNMP host address: / 2. SNMP host address:

The VIP X1600 module supports the SNMP (Simple Network Management Protocol) for managing and monitoring network components, and can send SNMP messages to IP addresses. It supports SNMP MIB II and its traps in their full functionality in the unified code. If you wish to send SNMP traps, enter the IP addresses of one or two required target devices here.

Multicasting



In addition to a 1:1 connection between an encoder and a single receiver (unicast), the VIP X1600 can enable multiple receivers to receive the video signal from an encoder simultaneously. The device either duplicates the data stream itself and then distributes it to multiple receivers (Multi-unicast) or it sends a single data stream to the network, where the data stream is simultaneously distributed to multiple receivers in a defined group (Multicast). For each encoder (video input) you can enter a dedicated multicast address and port for each stream. You can switch between the streams by clicking the appropriate tabs.

Note
Multicast operation requires a multicast-enabled network that uses the UDP and the Internet Group Management IGMP protocols. Other group management protocols are not supported. The TCP protocol does not support multicast connections.

A special IP address (class D address) must be configured for multicast operation in a multicast-enabled network.

The network must support group IP addresses and the Internet Group Management Protocol (IGMP V2). The address range is from 225.0.0.0 to 239.255.255.255.

The multicast address can be the same for multiple streams. However it will be necessary to use a different port in each case so that multiple data streams are not sent simultaneously using the same port and multicast address.

Note
You must set the parameters for each encoder (video input) and for each stream individually. The numbering follows the labeling of the video inputs on the actual unit.

Multicast address video 1: to **Multicast address video 4:**

Enter a valid multicast address for each stream from the relevant encoder (video input) to be operated in multicast mode (duplication of the data streams in the network).

With the setting **0.0.0.0** the encoder for the relevant stream operates in multi-unicast mode (copying of data streams in the unit). The VIP X1600 module supports multi-unicast connections for up to five simultaneously connected receivers.

Note
Duplication of data places a heavy demand on the unit and can lead to impairment of the image quality under certain circumstances.

Port:

Assign a different port to each data stream if there are simultaneous data streams at the same multicast address.

Enter the port address of the required stream here.

Streaming:

Click the checkbox to activate multicast streaming mode for the relevant stream. An enabled stream is indicated by a check mark.

Multicast audio port 1: to **Multicast audio port 4:**

As well as video data, the audio versions can also send and receive audio signals. The audio signals are sent in a separate data stream parallel to the video data, which increases the network load. The audio data are encoded according to G.711 and require an additional bandwidth of approx. 80 kBit/s per direction.

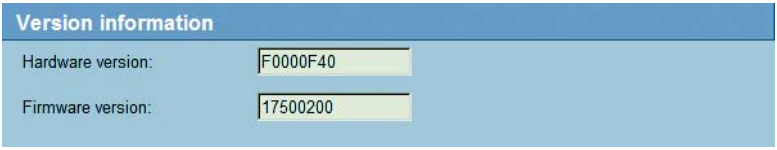
If you wish to transmit audio signals in multicast mode you must assign a dedicated port as this is a separate data stream. Enter the port address of the required stream here.

Note
Audio signals are only transmitted if the audio function has been activated on the **Audio settings** page (see page 47).

Multicast packet TTL:

You can enter a value to specify how long the multicast data packets are active on the network. This value must be greater than one if multicast is to be run via a router.

Version information



The hardware and firmware version numbers are for information only and cannot be changed. Keep a record of these numbers in case technical assistance is required.

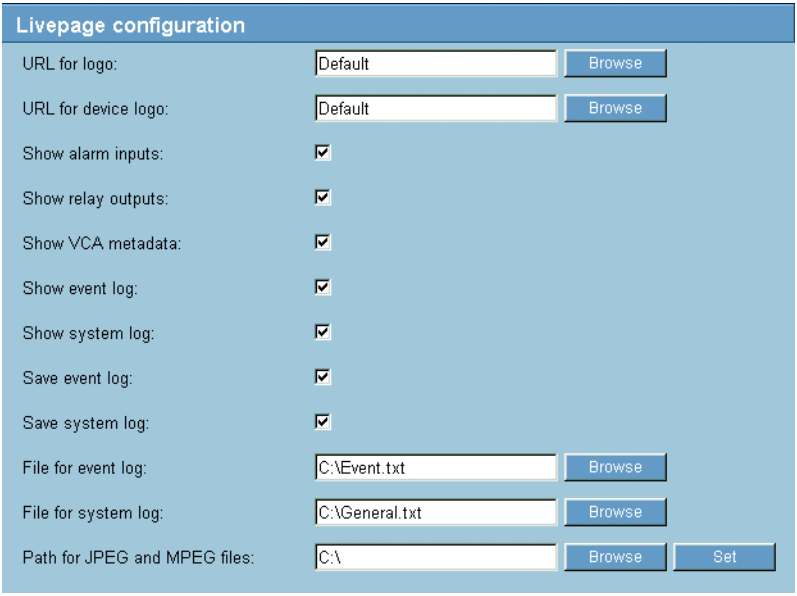
Hardware version:

The hardware version number of the VIP X1600 module is displayed.

Firmware version:

The firmware version number of the VIP X1600 module is displayed.

Livepage configuration



In this window you can customize the appearance of the **LIVEPAGE** to suit your requirements. You can opt to have selected information and controls displayed in addition to the video image.

If necessary, you can also replace the manufacturer's logo (upper left) and the product name (upper right) in the upper window area (banner) by individual graphics.

Note

You can use either GIF or JPEG images. The file paths must correspond to the access mode (for example `C:\Images\Logo.gif` for access to local files, or `http://www.mycompany.com/images/logo.gif` for access via the Internet/Intranet).

When accessing via the Internet/Intranet, ensure that a connection is always available to display the image. The image file is not stored in the VIP X1600 module.

– Check the box for the items that are to be displayed on the **LIVEPAGE**. The selected items are indicated by a check mark.

– Go to the **LIVEPAGE** to check whether and how the required items are displayed.

URL for logo:

Enter the path to a suitable graphic if you want to replace the manufacturer's logo. The image file can be stored on a local computer, in the local network or at an Internet address.

If necessary, click **Browse** to search for an appropriate graphic in the local network.

URL for device logo:

Enter the path to a suitable graphic if you want to replace the product name. The image file can be stored on a local computer, in the local network or at an Internet address.

– If necessary, click **Browse** to search for an appropriate graphic in the local network.

Note
If you want to use the original graphics again, simply delete the entries in the fields **URL for logo** and **URL for device logo**.

Show alarm inputs:

Alarm inputs are shown next to the video image as icons, along with their assigned names. If an alarm is active the corresponding icon changes color.

Show relay outputs:

Relay outputs are shown next to the video image as icons, along with their assigned names. If the relay is switched, the corresponding icon changes color.

Show VCA metadata:

Additional information from the VCA metadata can also be shown in the live video image, if the analysis is activated (see page 71).

Show event log:

The event messages are displayed along with the date and time in a field next to the video image.

Show system log:

The system messages are displayed along with the date and time in a field next to the video image and provide information about the establishment and termination of connections, etc.

Save event log:

Check this option to save event messages in a text file on your local computer.

You can then view, edit and print this file with any text editor or the standard Office software.

Save system log:

Check this option to save system messages in a text file on your local computer.

You can then view, edit and print this file with any text editor or the standard Office software.

File for event log:

Enter the path to save the event log here.

– If necessary, click **Browse** to find a suitable folder.

File for system log:

Enter the path to save the system log here.

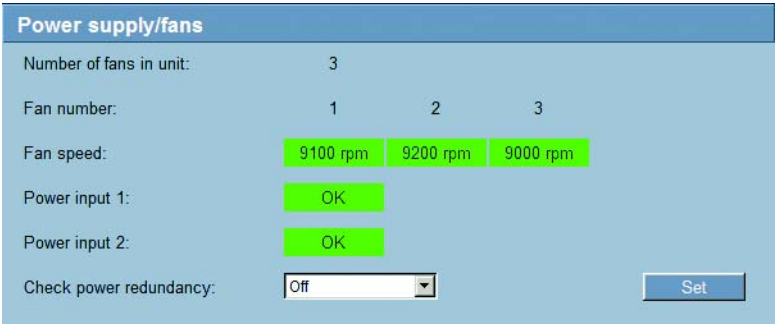
– If necessary, click **Browse** to find a suitable folder.

Path for JPEG and MPEG files:

Enter the path for the storage location of individual images and video sequences that you can save from the **LIVEPAGE**.

– If necessary, click **Browse** to find a suitable folder.

Power supply/fans



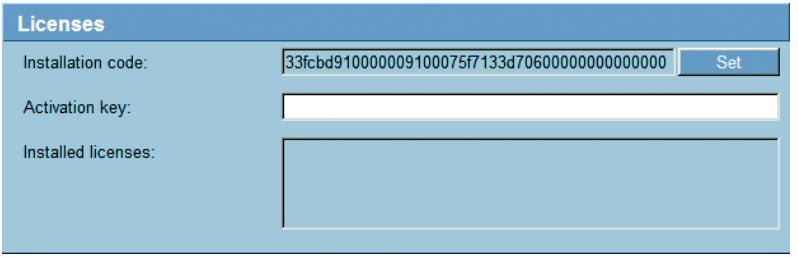
Information about the status of the fans and the power supply is displayed in this window.

Note
This page is only visible for a VIP X1600 module in slot 1.

Check power redundancy:

Select the option **On** if the VIP X1600 is to be supplied by two power supply units. This selection is important for displaying the power supply status messages correctly.

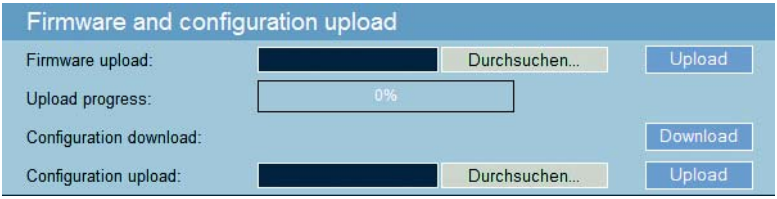
Licenses



You can enter the activation key to release additional functions or software modules.

Note
The activation key cannot be deactivated again and is not transferable to other units.

Firmware and configuration upload



Firmware upload:

The VIP X1600 modules are designed so that their functions and parameters can be updated by means of firmware. To do this, transfer the current firmware package to the unit via the selected network. It will then be automatically installed there.

In this way, a VIP X1600 module can be serviced and updated remotely without a technician having to change the installation on site.

You obtain the current firmware from your customer service or from the download area on our Internet site.

Caution

Before launching the firmware upload make sure that you have selected the correct upload file. Uploading the wrong files can result in the unit no longer being addressable, in which case you must replace the unit.

You should never interrupt the installation of firmware. An interruption can lead to the faulty programming of the flash-EPROM. This in turn can result in the unit no longer being addressable, in which case it will have to be replaced.

– First store the firmware file on your hard drive.

– Enter the full path of the firmware file in the field or click **Browse...** button to locate and select the file.

– Next, click **Upload** to begin transferring the file to the unit. The progress bar allows you to monitor the transfer.

The new firmware is unpacked and the Flash EPROM is reprogrammed.
The time remaining is shown by the message **going to reset Reconnecting in ... seconds**. The unit restarts automatically once the upload has successfully completed.

If the LED of the corresponding VIP X1600 module on the front side of the VIP X1600 is showing red, the upload has failed and you need to repeat the upload. To perform the upload you must now switch to a special page:

– In the address bar of your browser, after the VIP X1600 module's IP address enter `/main.htm` (for example `192.168.0.16/main.htm`).

– Repeat the upload.

Configuration download:

You can save configuration data for the VIP X1600 module on a computer and then load saved configuration data from a computer to the unit.

– Click the **Download** button. The computer displays a dialog box.

– Follow the on-screen instructions to save the current settings.

Configuration upload:

– Enter the full path of the file to upload or click **Browse...** to select the required file.

– Make certain that the file to be loaded comes from the same device type as the unit you want to reconfigure.

– Next, click **Upload** to begin transferring the file to the unit. The progress bar allows you to monitor the transfer.

Once the upload is complete the new configuration is activated. The time remaining is shown by the message **going to reset Reconnecting in ... seconds**. The unit restarts automatically once the upload has successfully completed.

Function test

The VIP X1600 offers a variety of configuration options. You should therefore check that it is functioning correctly after installation and configuration.

The function test is the only way to ensure that the VIP X1600 operates as expected in the event of an alarm.

Your check should include the following functions:

- Can the VIP X1600 be called remotely?
- Does the VIP X1600 transmit all the data required?
- Does the VIP X1600 respond to alarm events as required?
- Do the recordings occur as intended?
- Is it possible to control peripherals if necessary?

6 Operation

Operation with Microsoft Internet Explorer

A computer with Microsoft Internet Explorer (version 6.0 or higher) can receive live images from the unit, control cameras or other peripherals and replay saved video sequences.

Note
Make sure the graphics card is set to 16- or 32-bit color depth and that Microsoft Virtual Machine is installed and activated on your PC. If necessary, you can install the required software and controls from the product CD supplied (see **Components supplied**, page 11). You can find notes on using Internet Explorer in the online help in Internet Explorer.

System requirements

- Computer with Windows 2000/XP operating system, access to a network and Microsoft Internet Explorer (version 6.0 or higher)
- Monitor resolution 1024 × 768 pixels, color depth 16 or 32 bit
- For playing back recordings: connection to iSCSI server

Note
Take also note of the information in the **System Requirements** document on the product CD supplied.

Installing MPEG ActiveX

Note
Suitable MPEG ActiveX software must be installed on the computer to allow the live video images to be played back. If necessary, you can install the required software and controls from the product CD supplied (see **Components supplied**, page 11).

– Insert the CD in the CD-ROM drive of the computer. If the CD does not start automatically, open the root directory of the CD in Windows Explorer and double click **MPEGAx.exe**.

– Follow the on-screen instructions.

Establishing the connection

Any VIP X1600 module must be assigned a valid IP address to operate on your network.

The following default address is preset at the factory: **192.168.0.1**

– Start the Web browser.

– Enter the IP address of the VIP X1600 module as the URL. The connection is established and after a short time you will see the **LIVEPAGE** with the video image.

Note

The screen display can differ from that shown above, depending on the unit variants that you use.

The LIVEPAGE

Once the connection is established, the Web browser displays the **LIVEPAGE**. It shows the live video image on the right of the browser window. Depending on the configuration, various text overlays may be visible on the live video image (see **Display stamping**, page 38).

Other information may be shown next to the live video image on the Livepage. What is shown will depend on the settings you have made on the **Livepage configuration** screen (see page 87).

Note
If you do not connect, the device may have reached its maximum number of connections. The maximum number of connections depends on the unit and network configuration.

Protected VIP X1600 module

If the VIP X1600 module is password protected against unauthorized access, the Web browser displays a corresponding message and prompts you to enter the password when you attempt to access the protected areas.

Note
The VIP X1600 modules offer the option to limit the extent of access using various authorization levels (see page 34).

– Enter the user name and associated password in the corresponding text fields.

– Click **OK**. If the password is entered correctly, the Web browser displays the page called up.

Switching between VIP X1600 modules

If multiple modules have been installed in a VIP X1600, you can easily switch between the modules in the same unit.

– Click in the upper window on one of the links **Module 1** to **Module 4** to switch to the corresponding module in the same VIP X1600.

Note
A VIP X1600 module that is installed in another VIP X1600 must be selected via its IP address.

Image selection

You can view the image from each camera individually on a full screen.

– Click one of the tabs **Camera 1** ... **Camera 4** above the video image to view the corresponding camera image.

– Click **Quad video** above the video image to view all four video images.

– Click one of the tabs **MPEG-4 Stream 1**, **MPEG-4 Stream 2** or **M-JPEG** below the video image to toggle between the different displays of the camera images.

Camera control

The options for control of peripheral devices (for example a pan/tilt head or a dome camera) are dependent on the unit type installed and on the configuration of the VIP X1600.

If a controllable unit is connected and configured, the operating items for controlling the peripheral device can be seen to the left of the video image**.**

– To control a peripheral, click the appropriate controls.

– Move the mouse pointer over the video image. Additional options for controlling peripherals are displayed with the mouse pointer.

Digital I/O

In the event of an alarm, the alarm LED of the triggering alarm input lights up in green next to the video image. The unit's configuration determines whether the alarm is displayed, as well as additional details (see **Livepage configuration**, page 87).

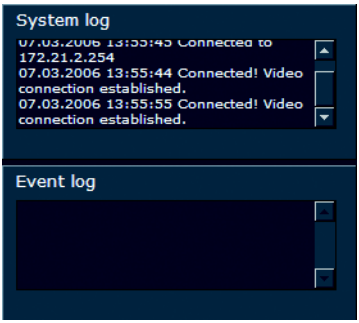
The alarm icons **Input 1** ... **Input 4** are for information purposes and indicate the status of an alarm input: **Active high** = icon lit green, **Active low** = icon not lit.

Trigger relay

You can switch connected units by means of the relays in the VIP X1600 modules (for example lights or door openers).

– To activate this, click the icon for the corresponding relay next to the video image. The icon will be red when the relay is activated.

System log / Event log


System log
07.03.2006 13:55:45 Connected to 172.21.2.254
07.03.2006 13:55:44 Connected! Video connection established.
07.03.2006 13:55:55 Connected! Video connection established.
Event log

The **System log** field contains information about the operating status of the unit and the connection. You can save these messages automatically in a file (see page 89).

Events such as the triggering or end of alarms are shown in the **Event log** field. You can save these messages automatically in a file (see page 89).

Audio function

Depending on the configuration, audio data can be transmitted from the unit. All users who are connected by browsers receive the audio signals sent by the unit.

Note
It is not possible to send audio signals to the unit.

Saving snapshots

You can save individual images from the video sequence(s) currently shown on the **LIVEPAGE** in JPEG format on your computer's hard drive.

You can save snapshots from each of the four cameras in the **Quad video** view. The icons below the camera images apply to the four camera images in a sequence from left to right as follows:

- upper left, upper right, lower left, lower right.

– Click the icon for saving single images. The image is saved at a resolution of 704 × 576 pixels (4CIF/D1). The storage location depends on the configuration of the unit (see page 89).

Recording video sequences

You can save sections of the video sequence(s) currently displayed on the **LIVEPAGE** on your computer's hard drive.

You can save video sequences from each of the four cameras in the **Quad video** view. The icons below the camera images apply to the four camera images in a sequence from left to right as follows:

- upper left, upper right, lower left, lower right.

– Click the icon for recording video sequences to start recording. The storage location depends on the configuration of the unit (see page 89). The flashing red dot in the icon indicates that recording is in progress.

– Click the icon for recording video sequences again to stop recording.

Image resolution

Sequences are saved at the resolution that has been preset in the configuration for the encoder (see page 42).

Installing MPEG viewer

You can play back saved video sequences using the MPEG viewer from Bosch Security Systems which can be found on the product CD supplied (see **Components supplied**, page 11).

Note
Suitable MPEG ActiveX software must be installed on the computer in order to play back saved video sequences using the MPEG viewer.

– Insert the CD in the CD-ROM drive of the computer. If the CD does not start automatically, open the CD in Windows Explorer.

– Open the **MPEG-Viewer** directory and copy the **MPEGViewer.exe** file to your computer's hard drive.

– If necessary, you can also start the MPEG viewer by double-clicking the file **MPEGViewer.exe**.

Running recording program

The hard drive icon below the camera images on the **LIVEPAGE** changes during an automatic recording by one of the stored programs to the RAM memory of a VIP X1600 module or to an iSCSI storage device.

The icon lights up green and displays a moving graphic to indicate a running recording. If no recording is taking place, a gray icon is displayed.

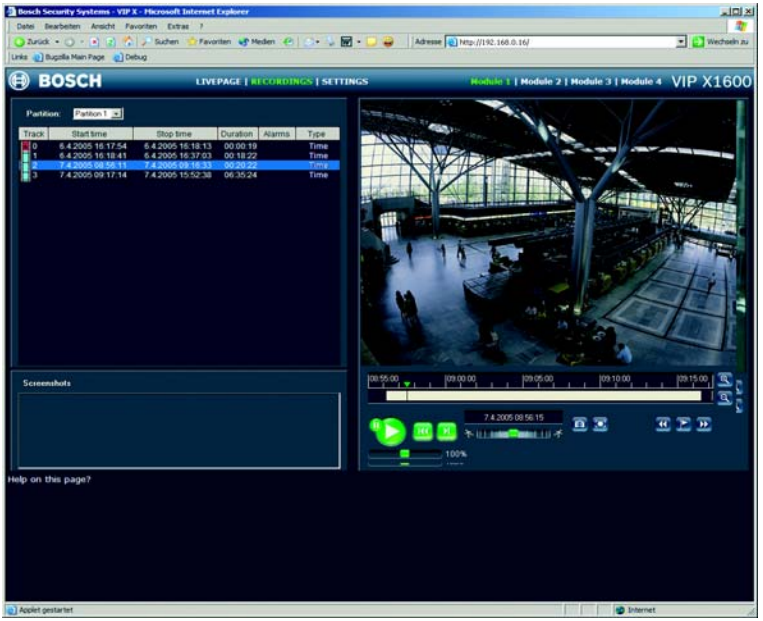
Note
You can ascertain from the **Quad video** view for which camera a recording is running by moving the mouse point over the icon. A message is displayed below the mouse pointer.

The RECORDINGS page

You can access the **RECORDINGS** page for playing back recorded video sequences from the **LIVEPAGE** as well as from the **SETTINGS** menu.

The **RECORDINGS** link is only visible if a storage medium has been selected (see page 50).

– Click in the navigation bar in the upper section of the window on the link **RECORDINGS**. The playback page appears.



Selecting recordings

In the left section of the page, first select the partition whose recordings you want to view.

All sequences that are saved in the partition are displayed in the list. A running number (track) is assigned to each sequence. Start time and stop time, recording duration, number of alarms, and recording type are displayed.

– Click a partition name from the list to display the recordings for this partition.

– Click a list entry. The playback for the selected sequence starts immediately in the video window.

Controlling a playback

You will see a time bar below the video image for quick orientation. If a particular sequence has been selected for playback by means of click, the selected sequence appears in the list in blue with a green border. The associated time interval is displayed in the bar in gray. A green arrow above the bar indicates the position of the image currently being played back within the sequence.

The time bar offers various options for navigation in and between sequences.

– You can change the time interval displayed by moving the gray area to the left or right while holding down the mouse button.

– You can change the time interval displayed by clicking the zoom keys (magnifying glass icons). The display can span a range from two months to a few seconds.

– You can select a different sequence for playback by clicking on the corresponding gray marking.

– If required, drag the green arrow to the point in time at which the playback should begin. Alternatively you can double-click directly in the gray time interval or in the timescale to jump to the position selected in this manner.
The date and time display below the bar provides orientation to the second.

You can control playback by means of the buttons below the video image.
The buttons have the following functions:

Start playback
or pause

Jump to start of active video sequence or
to previous sequence in the list

Jump to end of active video sequence or
to next sequence in the list

You can use the slide control to control playback speed and fast forward/rewind: positioning in the middle indicates playback at recording speed, left indicates rewind, and right fast forward. The fast forward or rewind speed changes, depending on how far you move the slide control toward the runner icons.

You can continuously select playback speed by means of the speed regulator:

Red bars within the gray sequence fields indicate the points in time where alarms were triggered. Drag the green arrow to navigate to these points quickly.

In addition, you can set markers in the sequences, so-called bookmarks, and jump directly to these. These bookmarks are indicated as small yellow arrows above the time interval. Use the bookmarks as follows:

Jump to the previous bookmark

Set bookmark

Jump to the following bookmark

– Right-click a bookmark to delete it.

Note

Bookmarks are only valid while you are in the **RECORDINGS** page; they are not saved with the sequences. As soon as you leave the page all bookmarks are deleted.

Backup

You can back up the videosequences or single images stored on the hard drive of the unit to the computer's hard drive.

First select the required sequence as described in the previous section. The following buttons are available for the backup:

Back up a sequence to the computer's hard drive

Back up a single image to the computer's hard drive

– Start playback of the sequence that you want to save either completely or partially on the computer's hard drive.
– Click the icon for the sequence backup. The backup starts immediately – this process is displayed by a flashing red dot in the icon.
– Click the sequence backup icon again to end the backup.

This procedure can be repeated many times within the sequence to back up multiple extracts from a longer sequence.

– Click the button for backing up a single image to back up only snapshots from the running sequence to your computer's hard drive.

The single images are immediately displayed in the **Screenshots** area after clicking.

The storage location for the sequences and single images can be specified in the configuration of the unit (see page 89).

Installing MPEG viewer

You can play back saved video sequences using the MPEG viewer from Bosch Security Systems which can be found on the product CD supplied (see **Components supplied**, page 11).

Note
Suitable MPEG ActiveX software must be installed on the computer in order to play back saved video sequences using the MPEG viewer. Further information can be found on page 95.

– Insert the CD in the CD-ROM drive of the computer. If the CD does not start automatically, open the CD in Windows Explorer.

– Open the **MPEG-Viewer** directory and copy the **MPEGViewer.exe** file to your computer's hard drive.

– If necessary, you can also start the MPEG viewer by double-clicking the file **MPEGViewer.exe**.

Hardware connections between video servers

You can easily connect a VIP X1600 with connected cameras as a sender, and a suitable MPEG-4 compatible hardware decoder (for example VIP XD) with a connected monitor as a receiver via an Ethernet network. In this way it is possible to cover long distances without the need for major installation or cabling work.

Installation

Compatible video servers are designed to connect to one another automatically, provided they are correctly configured. They only need to be part of a closed network. Proceed as follows to install the units:

– Connect the units to the closed network using Ethernet cables.

– Connect them to the power supply.

Note
Make sure that the units are configured for the network environment and that the correct IP address for the remote location to be contacted in the event of an alarm is set on the **Alarm connections** configuration page (see page 68).

Connecting

There are three options for establishing a connection between a sender and a compatible receiver in a closed network:

- an alarm,
- a terminal program or
- Internet Explorer.

Note
Connecting with a Web browser is described in the manual of the relevant unit that is to be used as the receiver, for example VIP XD.

Connect on alarm

With the appropriate configuration, a connection between a sender and a receiver is made automatically when an alarm is triggered (see page 68). After a short time the live video image from the sender appears on the connected monitor.

This option can also be used to connect a sender and a compatible receiver using a switch connected to the alarm input. You do not need a computer to make the connection in this case.

Connecting with a terminal program

Various requirements must be met in order to operate with a terminal program (see page 119).

– Start the terminal program and enter the command `1` in the main menu to switch to the **IP** menu.

– Enter the command `4` in the **IP** menu to change the remote IP address, then enter the IP address of the unit you wish to connect to.

– Enter the command `0` to return to the main menu and then enter the command `4` to switch to the **Rcp+** menu.

– In the **Rcp+** menu, enter the command `5` to activate the automatic connection.

Closing the connection with a terminal program

– Start the terminal program (see page 119) and enter the command `4` in the main menu to switch to the **Rcp+** menu.

– In the **Rcp+** menu, enter the command `5` to deactivate the automatic connection.

Operation with decoder software

The video server VIP X1600 provides a highly efficient systems solution together with the VIDOS software.

VIDOS is a software package for operating, controlling and managing of CCTV installations (such as surveillance systems) at remote locations. It runs under Microsoft Windows operating systems. It is primarily designed for decoding video, audio and control data received from a remote sender.

There are many options available for operation and configuration when using a unit with VIDOS. Please refer to the software documentation for more details.

7 Maintenance and upgrades

Testing the network connection

You can use the `ping` command to check the connection between two IP addresses. This allows you to test whether a unit in the network is active.

– Open the DOS command prompt.

– Type `ping` followed by the IP address of the VIP X1600 module.

If the VIP X1600 module is found, the response appears as `Reply from ...` followed by the number of bytes sent and the transmission time in milliseconds. If not, the unit cannot be accessed via the network. This might be because:

- The VIP X1600 is not correctly connected to the network. Check the cable connections in this case.
- The VIP X1600 module is not correctly integrated into the network. Check the IP address, subnet mask and gateway address.

Restart (Reset)

You can initiate a restart of the VIP X1600 module, for example if the module is no longer responding. In this case all settings are maintained.

– In the address field of the Web browser, enter `/reset` after the IP address of the VIP X1600 module (for example `192.168.0.16/reset`).

A new page with the message **going to reset Reconnecting in ... seconds** appears, showing the length of time to the next automatic reconnection.

Repairs

Caution

Do not modify any component of the VIP X1600 modules or the VIP X1600 base. The unit does not contain any user-serviceable parts.

Ensure that all maintenance or repair work is carried out only by qualified personnel (electrical engineers or network technology specialists). In case of doubt, contact your dealer's technical service center.

Transfer and disposal

The VIP X1600, the VIP X1600 base and a VIP X1600 module should only be passed on together with this installation and operating manual.

Your Bosch product is designed and manufactured with high quality materials and components which can be recycled and reused.

This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.

In the European Union, there are separate collection systems for used electrical and electronic products. Please, dispose of this equipment at your local community waste collection/recycling center.

8 Appendix

Troubleshooting

If you cannot resolve a fault, please contact your supplier or system administrator or go directly to Bosch Security Systems Customer Service.

The version numbers of the internal processors can be viewed on a special page. Make a note of this information before contacting Customer Service.

– In the address bar of your browser, enter `/version.htm` after the IP address of the VIP X1600 module (for example `192.168.0.16/version.htm`).

– Write down the information or print out the page.

The following table is intended to help you identify the causes of malfunctions and correct them where possible.

Malfunction	Possible causes	Solution
No connection between module and terminal program.	Incorrect cable connections.	Check all cables, plugs, contacts and connections.
	The computer's serial interface is not connected.	Check the other serial interface.
	Interface parameters do not match.	If necessary select a different interface and make sure that the computer's interface parameters match those of the module. Try the following standard parameters: 19,200 baud, 8 data bits, no parity, 1 stop bit. Next, disconnect the unit from the power supply and reconnect it again after a few seconds.
No image transmission to remote station.	Camera error.	Connect local monitor to the camera and check the camera function.
	Faulty cable connections.	Check all cables, plugs, contacts and connections.

Malfunction	Possible causes	Solution
No connection established, no image transmission.	The module's configuration.	Check all configuration parameters.
	Faulty installation.	Check all cables, plugs, contacts and connections.
	Wrong IP address.	Check the IP addresses (terminal program).
	Faulty data transmission within the LAN.	Check the data transmission with `ping`.
	The maximum number of connections has been reached.	Wait until there is a free connection and then call the sender again.
No audio transmission to remote station.	Hardware fault.	Check that all connected audio units are operating correctly.
	Faulty cable connections.	Check all cables, plugs, contacts and connections.
	Incorrect configuration.	Check the configuration of the audio settings (gain and activation).
The module does not report an alarm.	Alarm source is not selected.	Select possible alarm sources on the **Alarm sources** configuration page.
	No alarm response specified.	Specify the desired alarm response on the **Alarm connections** configuration page, change the IP address if necessary.
Control of cameras or other units is not possible.	The cable connection between the serial interface and the connected unit is not correct.	Check all cable connections and ensure all plugs are properly fitted.
	The interface parameters do not match those of the other unit connected.	Make sure that the settings of all units involved are compatible.
The module is not operational after a firmware upload.	Power failure during programming by firmware file.	Have the module checked by Customer Service and replace if necessary.
	Incorrect firmware file.	Enter IP address of the module followed by `/main.htm` in your Web browser and repeat the upload.

LEDs

The VIP X1600 network video server is equipped with a number of LEDs that show the operating status and can give indications of possible malfunctions.

RJ45 sockets 10/100/1000 Base-T

Green LED lit up:	Network connection exists.
Orange LED flashes:	Data transmission via the network.

Module 1 / Module 2 / Module 3 / Module 4

LED off	Slot not occupied.
LED lit green	VIP X1600 module is switched on.
LED flashes green	VIP X1600 module is being accessed.
LED lit red (briefly)	Startup in progress.
LED lit red (continuously)	Defect in VIP X1600 module, firmware upload failed.

Power / Fail

LED off	VIP X1600 is switched off.
LED lit green	VIP X1600 is switched on.
LED flashes red	Defect in fans or redundant power supply unit.

Serial interface

Options for using the serial interface include transferring transparent data, controlling connected units or operating the unit with a terminal program.

The serial interface supports the RS232, RS422 and RS485 transmission standards. The standard used depends on the current configuration (see page 80). Connection is via the terminal connector. See 118 for the pin assignment.

Terminal block

The terminal block has several contacts for:

- 4 alarm inputs
- 4 relay outputs
- Serial data transmission

Pin assignment (starting at upper left)

Contact	Function
IN1	Input alarm 1
IN3	Input alarm 3
GND	Ground alarm inputs
R1	Relay output 1
R2	Relay output 2
R3	Relay output 3
R4	Relay output 4
CTS	Clear to send
RXD	Receive data
GND	Ground
IN2	Input alarm 2
IN4	Input alarm 4
GND	Ground alarm inputs
R1	Relay output 1
R2	Relay output 2
R3	Relay output 3
R4	Relay output 4
RTS	Ready to send
TXD	Transmit data
GND	Ground

Connect one alarm input via a trigger contact to a ground contact when connecting alarm inputs.

Communication with terminal program

Data terminal

In the case where a VIP X1600 module cannot be found in the network or the connection to the network is interrupted, you can connect a data terminal to the VIP X1600 module for implementation and setting of important parameters. The data terminal consists of a computer with a terminal program.

You require a serial transmission cable with a 9-pin Sub-D connector to connect to the computer and open ends for connection to the terminal plug of the VIP X1600 module (pin assignment see page 118).

HyperTerminal, a communications accessory included with Microsoft Windows, can be used as the terminal program.

Note
Information on installing and using HyperTerminal can be found in the manuals or in the online help for MS Windows.

– Disconnect the VIP X1600 from the Ethernet network before working with the terminal program.

– Connect the serial interface of the VIP X1600 module using any available serial interface on the computer.

Configuring the terminal

Before the terminal program can communicate with the VIP X1600 module, the transmission parameters must be matched. Make the following settings for the terminal program:

- 19,200 bit/s
- 8 data bits
- No parity check
- 1 stop bit
- No protocol

Command inputs

After the connection has been established, you must log on to the VIP X1600 module to access the main menu. Other submenus and functions can be accessed using the on-screen commands.

– If necessary, turn off the local echo so that entered values are not repeated on the display.

– Enter one command at a time.

– When you have entered a value, such as an IP address, check your input again before pressing the ENTER key to transfer the values to the VIP X1600 module.

Assigning an IP Address

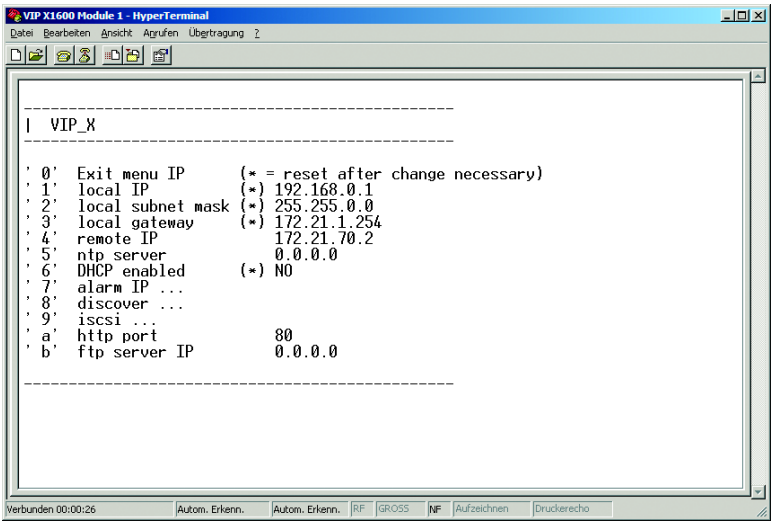
Before you can operate a VIP X1600 module in your network you must first assign it an IP address that is valid for your network.

The following default address is preset at the factory: **192.168.0.1**

– Start a terminal program such as HyperTerminal.

– Enter the user name `service`. The terminal program displays the main menu.

– Enter the command `1` to open the IP menu.


VIP X1600 Module 1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung ?
| VIP_X
' 0' Exit menu IP (* = reset after change necessary)
' 1' local IP (*) 192.168.0.1
' 2' local subnet mask (*) 255.255.0.0
' 3' local gateway (*) 172.21.1.254
' 4' remote IP 172.21.70.2
' 5' ntp server 0.0.0.0
' 6' DHCP enabled (*) NO
' 7' alarm IP ...
' 8' discover ...
' 9' iscsi ...
' a' http port 80
' b' ftp server IP 0.0.0.0
Verbunden 00:00:26
Autom. Erkenn.
Autom. Erkenn.
RF
GROSS
NF
Aufzeichnen
Druckerecho

– Enter `1` again. The terminal program displays the current IP address and prompts you to enter a new IP address.

– Enter the desired IP address and press Enter. The terminal program displays the new IP address.

– Use the displayed commands for any additional settings which you require.

Note
You must restart to activate the new IP address, a new subnet mask or a gateway address.

Restart

Briefly interrupt the power supply to the VIP X1600 for a restart (disconnect the power supply unit from the mains supply and switch on again after a few seconds).

Additional parameters

You can use the terminal program to check other basic parameters and modify them where necessary. Use the on-screen commands in the various submenus to do this.

Glossary

Brief explanations of some of the terms and abbreviations used in this manual are given below.

10/100/1000 Base-T	IEEE-802.3 specification for 10, 100 or 1000 MBit/s Ethernet
ARP	Address Resolution Protocol: a protocol for mapping MAC and IP addresses
Baud	Unit of measure for the speed of data transmission
Bit/s	Bits per second, the actual data rate
CIF	Common Intermediate Format, video format with 352 × 288/240 pixels
DNS	Domain Name Service
FTP	File Transfer Protocol
Full duplex	Simultaneous data transmission in both directions (sending and receiving)
GoP	Group of Pictures
HTTP	Hypertext Transfer Protocol
ICMP	Internet Control Message Protocol
ID	Identification: a machine readable character string
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
Internet Protocol	The main protocol used on the Internet, normally in conjunction with the Transfer Control Protocol (TCP): TCP/IP
IP	*See* Internet Protocol
IP address	A 4-byte number uniquely defining each unit on the Internet. It is usually written in dotted decimal notation, for example "209.130.2.193"
iSCSI	Storage over IP process for storage networks; specifies how storage protocols are operated over IP.
ISDN	Integrated Services Digital Network
JPEG	An encoding process for still images (Joint Photographic Experts Group)
kBit/s	Kilobits per second, the actual data rate
LAN	*See* Local area network
Local area network	A communications network serving users within a limited geographical area such as a building or university campus. It is controlled by a network operating system and uses a transfer protocol.
LUN	Logical Unit Number (logical drive in iSCSI storage systems)
MAC	Media Access Control

MIB	Management Information Base; a collection of information for remote servicing using the SNMP protocol
MPEG-4	A further development of MPEG-2 designed for transmitting audiovisual data at very low transfer rates (for example over the Internet)
Net mask	A mask that explains which part of an IP address is the network address and which part is the host address. It is usually written in dotted decimal notation, for example "255.255.255.192"
Parameters	Values used for configuration
QCIF	Quarter CIF, video format with 176 × 144/120 pixels
RFC 868	A protocol for synchronizing computer clocks over the Internet
RS232/RS422/RS485	Standards for serial data transmission
RTP	Realtime Transport Protocol; a transmission protocol for real-time video and audio
SNIA	Storage Networking Industry Association; association of companies for defining the iSCSI standard.
SNMP	Simple Network Management Protocol; a protocol for network management, for managing and monitoring network components
Subnet mask	*See* Net mask
TCP	Transfer Control Protocol
Telnet	Login protocol with which users can access a remote computer (Host) on the Internet
TTL	Time-To-Live; life cycle of a data packet in station transfers
UDP	User Datagram Protocol
URL	Uniform Resource Locator
UTP	Unshielded Twisted Pair
WAN	*See* Wide area network
Wide area network	A long distance link used to extend or connect remotely located local area networks

Specifications VIP X1600 base

Device

Operating voltage	12 V DC, redundant
Power consumption	Maximum 60 W with 4 VIP X1600 modules
LAN interface	2 × Ethernet 10/100/1000 Base-T, automatic adjustment, half/full duplex, RJ45
Displays	5 × LED (status modules, operation/error) 2 × LED (network connection, data transmission) on every LAN interface
Operating conditions	Temperature: 0 ... +50 °C (+32 ... +122 °F) relative humidity: 20 ... 80 %, non-precipitating, altitude 0 ... 3,000 m
Storage conditions	Temperature: –20 ... +60 °C (–4 ... +140 °F) relative humidity: 0 ... 95%, non-precipitating, maximum altitude 10,000 m
Heat emission	205 BTU/h
Regulatory approvals	CE: IEC 60950; UL 1950; AS/NZS 3548; EN 55103-1, -2; EN 55130-4; EN 55022; EN 55024; EN 61000-3-2; EN 61000-3-3; FCC 47 CFR Chapter 1 Part 15
Dimensions (w × h × d)	440 × 44 × 210 mm (17.32 × 1.73 × 8.27 in.) including BNC connections for modules
Weight (with 4 modules)	Approx. 4 kg (9 lbs)

Specifications VIP X1600 module

Device

Operating voltage	Supply via housing VIP X1600 base
Power consumption	Maximum 12 W
Data interface	1 × RS232/RS422/RS485, bidirectional terminal plugs
Alarm inputs	4 × non-isolated closing contact, terminal plugs, max. activation resistance 10 Ohm
Relay outputs	4 × 30 V_{p-p}, 2 A, terminal plugs
Video inputs	4 × BNC socket 0.7 ... 1.2 V_{p-p}, 75 Ohm switchable, PAL/NTSC
Dual Streaming	Yes
Audio inputs (Line in)	Audio version only: 2 × 3.5-mm stereo jack socket, mono, 5.5 V_{p-p} max., impedance 9 kOhm type.
Storage medium	RAM 32 MB internal
Operating conditions	Temperature: 0 ... +50 °C (+32 ... +122 °F) relative humidity: 20 ... 80 %, non-precipitating, altitude 0 ... 3,000 m
Storage conditions	Temperature: –20 ... +60 °C (–4 ... +140 °F) relative humidity: 0 ... 95%, non-precipitating, maximum altitude 10,000 m
Heat emission	41 BTU/h
Regulatory approvals	CE: IEC 60950; UL 1950; AS/NZS 3548; EN 55103-1, -2; EN 55130-4; EN 55022; EN 55024; EN 61000-3-2; EN 61000-3-3; FCC 47 CFR Chapter 1 Part 15
Weight	Approx. 0.3 kg (0.5 lb)

Protocols/standards

Video standards	PAL, NTSC
Video coding protocols	MPEG-4, JPEG
Video data rate	9.6 kBit/s ... 6 MBit/s per channel
Image resolutions (PAL/NTSC)	704 × 576/480 pixels (4CIF/D1) 704 × 288/240 pixels (2CIF) 464 × 576/480 pixels (2/3 D1) 352 × 576/480 pixels (1/2 D1) 352 × 288/240 pixels (CIF) 176 × 144/120 pixels (QCIF)
Overall delay	120 ms (PAL/NTSC)
Image refresh rate	1 ... 50/60 fields/s variable (PAL/NTSC), Field/image-based encoding
Network protocols	RTP, Telnet, UDP, TCP, IP, HTTP, IGMP V2, IGMP V3, ICMP, ARP, SNMP

Audio versions only:

Audio coding protocol	G.711, 300 Hz ... 3.4 kHz
Audio sampling rate	8 kHz
Audio data rate	80 kBit/s

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